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The Aerometric and Emissions Reporting System (AEROS) Manual Series
Volume II. AEROS User's Manual

Environmental Protection Agency, Research Triangle Park, N C

Dec 76

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16. ABSTRACT

This manual provides appropriate guidance to the AEROS user for the preparation, collection, and maintenance of data into the AEROS systems. Recognizing that the establishment of standardized methods and procedures is of primary importance in maintaining an efficient and effective information reporting system, NADB has developed a series of preprinted forms to be used for the recording and reporting of air quality and emissions data. Section 2 of this volume presents a full description of each form and its purpose, and a sample copy of the form. Detailed instructions for calculating and entering data on each of these forms are presented in Section 3. A comprehensive set of keypunching instructions for each of the AEROS forms is provided in Section 4. Section 5 is "Open", and may be used for future expansion of this Volume. The flow of information into and out of NADB and the Regional Office is detailed in Section 6 with instructions for transmitting data to NADB. Section 7 details the processes involved in the detection and resolution of data errors.

The AEROS Manual Series consists of the following five volumes: AEROS Overview, Vol. I, AEROS User's Manual, Vol. II, AEROS Summary and Retrieval Manual, Vol. III, NADB Internal Operations Manual, Vol. IV, and AEROS Manual of Codes, Vol. V.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
AEROS NADB NEDS SAROAD		

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VOLUME II:
AEROS USER'S MANUAL

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Office of Air and Waste Management
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

EPA-450/2-76-029
(OAQPS NO. 1.2-039)

AEROS MANUAL SERIES
VOLUME II:
AEROS USER'S MANUAL

National Air Data Branch
Monitoring and Data Analysis Division

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Waste Management
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

December 1976

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This document has been reviewed by the Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Environmental Protection Agency, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

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FOREWORD

This publication replaces the previous draft of Volume II, dated December 1975. The information contained in APTD-0663, Users Manual: SAROAD (Storage and Retrieval of Aerometric Data), and APTD-1135, Guide for Compiling a Comprehensive Emission Inventory, is also covered in this volume, and this volume contains the more current information. The procedures covered in this manual are subject to continual update and revision, as noted in Sections 0.1.0 and 1.0.0 of this volume. A user who is not certain that he has the most current information available or who has other questions or comments concerning the contents of this publication should contact the Library Services Office or the AEROS Manual Project Officer as indicated in Sections 0.1.0 and 1.0.0.

VOLUME II

AEROS USER'S MANUAL

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LIST OF ABBREVIATIONS

AEROS	Aerometric and Emissions Reporting System
AQCR	Air Quality Control Region
CO	Carbon monoxide
CO_2	Carbon dioxide
DP	Decimal point
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
HATREMS	Hazardous and Trace Emissions System
HC	Hydrocarbons
HDV	Heavy-duty vehicle
IPP	Implementation Planning Program
LDV	Light-duty vehicle
LPG	Liquified petroleum gas
LTO	Landing-take off
MSL	Mean sea level
NADB	National Aerometric Data Bank
NASN	National Air Sampling Network
NEDS	National Emissions Data System
NO	Nitric oxide
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
NSPS	New Source Performance Standard
O_3	Ozone
SAROAD	Storage and Retrieval of Aerometric Data
SCC	Source Classification Code
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SMSA	Standard Metropolitan Statistical Area
SO_2	Sulfur dioxide
SO_x	Oxides of sulfur
SOTDAT	Source Test Data
ST HR	Start hour
TSP	Total suspended particulates
UTM	Universal Transverse Mercator
VMT	Vehicle-miles traveled

As the usefulness of the AEROS Manuals is highly dependent on their completeness, accuracy and timeliness, the following provisions have been made to allow for revisions in the interim between periodic complete review and reprinting of volumes. Revisions will be accomplished through the issuance of AEROS Manual Updates, which may contain one or more separate revisions to a given Volume.

Responsibility for technical aspects of revisions is held by the groups in NADB responsible for the relevant system or operation, while compilation of revisions into Updates, and reproduction and distribution are overseen by the AEROS Manual Project Officer, Requests and Information Section.

These Updates will ordinarily be distributed to specific parties in OAQPS and other selected internal users and to AEROS Contacts in Regional Offices, who are designated holders of the appropriate AEROS Manual Volumes by their respective organizational units. These recipients are responsible for reviewing each Update and inserting it in the appropriate Volume and removing outdated portions as directed. They should also notify persons in their organizations to whom specific revisions may be of importance, and provide copies of revisions to those persons requiring them.

Three distinct types of revisions are foreseen: Urgent, Priority and Routine. Urgent revisions must be issued and entered into Manual Volumes as soon as possible to prevent adverse affects on operations. Prior to compilation in a formal Update, drafts of Urgent revisions will be distributed to NADB and Regional Office AEROS Contacts with instructions on the timing of their use in system operations. These drafts should be filed in the appropriate Manual Volumes immediately preceeding the portions to be replaced, pending issuance of the formal Update. Due to the importance of their timeliness, Urgent revisions will be issued by RIS as soon as complete, in Urgent Updates which will include any other revisions awaiting distribution at that time.

Priority revisions are substantive changes not crucial to system operations, and will generally be issued in Updates on a quarterly basis or combined with Urgent Updates when appropriate. Routine revisions are relatively unimportant changes such as editorial corrections, and will be included in Urgent or regular quarterly Updates as available.

Updates will consist of the actual revisions and any attendant changes to the Volume's Table of Contents, in appropriate format, accompanied by an Update Notice and any memoranda deemed appropriate by RIS. Updates will be compiled and numbered separately by AEROS Manual Volumes, with the Update Notice serving as an index and guide to implementation of the Update. The Update Notice will specify pages or sections to be removed and/or inserted, with descriptive comments on the content and relevance of changes. It will also include a summary of dates and numbers of previous Updates to the subject Volume, for verification of currency of the Volume. Upon receipt of an Update, the changes should be made as indicated on the Update Notice and the Notice itself initialed and filed in Section 0, Chapter 2.

A full compilation of Update Notices for each Manual Volume, entitled "Summary of AEROS Manual Updates: Volume ___," is available to users by request to:

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Office of Administration
Environmental Protection Agency
Research Triangle Park, N.C. 27711

FTS: 629-2777
Commercial: (919) 549-8411 X2777

This document will allow the user to examine all previous Updates to determine the currency of any copy of the Volume, and, through the comments, possible relevance of revisions to specific areas of interest. This reference is provided especially for infrequent users and others not receiving Updates on a regular basis.

User input on the AEROS Manuals and possible revisions is welcomed. Technical or substantive matters should be referred directly to the cognizant party in NADB, if possible. Any questions on the appropriate source of technical information and any questions, comments or suggestions on the coverage, organization and other such aspects of this Volume should be directed to:

AEROS Manual Project Officer (MD 14)
Requests and Information Section
National Air Data Branch
Environmental Protection Agency
Research Triangle Park, N.C. 27711

Large quantities of complex data from many sources are required by NADB to meet its assigned responsibilities of preparing and distributing periodic reports on air quality and air pollutant emissions. Inevitably, problems will arise in the preparation, collection, and control of these data.

The purpose of Volume II is to provide appropriate guidance which will assist the user to alleviate or eliminate many of these problems.

Recognizing that the establishment of standardized methods and procedures is of primary importance in maintaining an efficient and effective information reporting system, NADB has developed a series of preprinted forms to be used for the recording and reporting of air quality and emissions data. Section 2 of this volume presents a full description of each form and its purpose, and a sample copy of the form.

Detailed instructions for calculating and entering data on each of these forms are presented in Section 3. These instructions must be followed exactly to avoid costly delays caused by repetitious data corrections and resubmission actions.

A comprehensive set of keypunching instructions for each of the AEROS forms is provided in Section 4. It should be noted that each reporting activity is responsible for punching its own data.

Section 5 is "Open," and may be used for future expansion of this Volume.

The flow of information into and out of NADB and the Regional Office is detailed in Section 6 with instructions for transmitting data to NADB.

The importance of accurate data to the proper functioning of the AEROS system cannot be overemphasized. To ensure the highest degree of accuracy, an extensive data auditing system has been developed. Section 7 details the processes involved in the detection and resolution of data errors.

Sections and chapters of this document have been arranged in a format that permits easy and convenient replacement of material as information concerning AEROS is published and distributed. To speed dissemination of AEROS information, sections or chapters that contain new data will be issued - separate from the parent report - whenever they are revised.

To facilitate the addition of future materials, the punched, loose-leaf format was selected. This approach permits the document to be placed in a three-ring binder or to be secured by rings, rivets, or other fasteners; future supplements or revisions can then be easily inserted. The upper right-hand corner of each page of the document bears a notation that indicates the date the information was issued.

At the time of the first printing of this Volume, work is underway on chapters for the Hazardous and Trace Emissions System (HATREMS). Section 2, Form Description, will include Chapter 2.6, Section 3, Form Preparation, will include Chapter 3.6, and Section 4, Keypunching, will include Chapter 4.6 on HATREMS. When completed, these chapters will be issued via regular update procedures to be inserted in this Volume.

Future supplements or revisions will be distributed in the same manner as this parent document.

The instructions contained in this volume are sufficient to enable the user to deal competently with normal AEROS data input preparation. Any questions which may arise or suggestions for improvement due to situations or circumstances not covered by these instructions should be addressed to:

Chief, Requests and Information Section
National Air Data Branch
Office of Air Quality Planning and Standards
Office of Air and Waste Management
Environmental Protection Agency
Research Triangle Park, North Carolina 27711

The Area Source Input Form (Figure 2.1.1-a) is divided into seven major sections with a group of spaces at the top of the form provided for identification codes. The major sections are:

1. Area Identification
2. Total Emissions Estimates
3. Stationary Sources Fuel Use (Residential Fuel, Commercial and Institutional Fuel, and Industrial Fuel)
4. Solid Waste Disposal Operations (On-Site Incineration and Open Burning)
5. Gasoline and Diesel Fuel Use
6. Miscellaneous Sources
7. Comments
8. Space for Coding Hand Calculated Emissions and Comments.

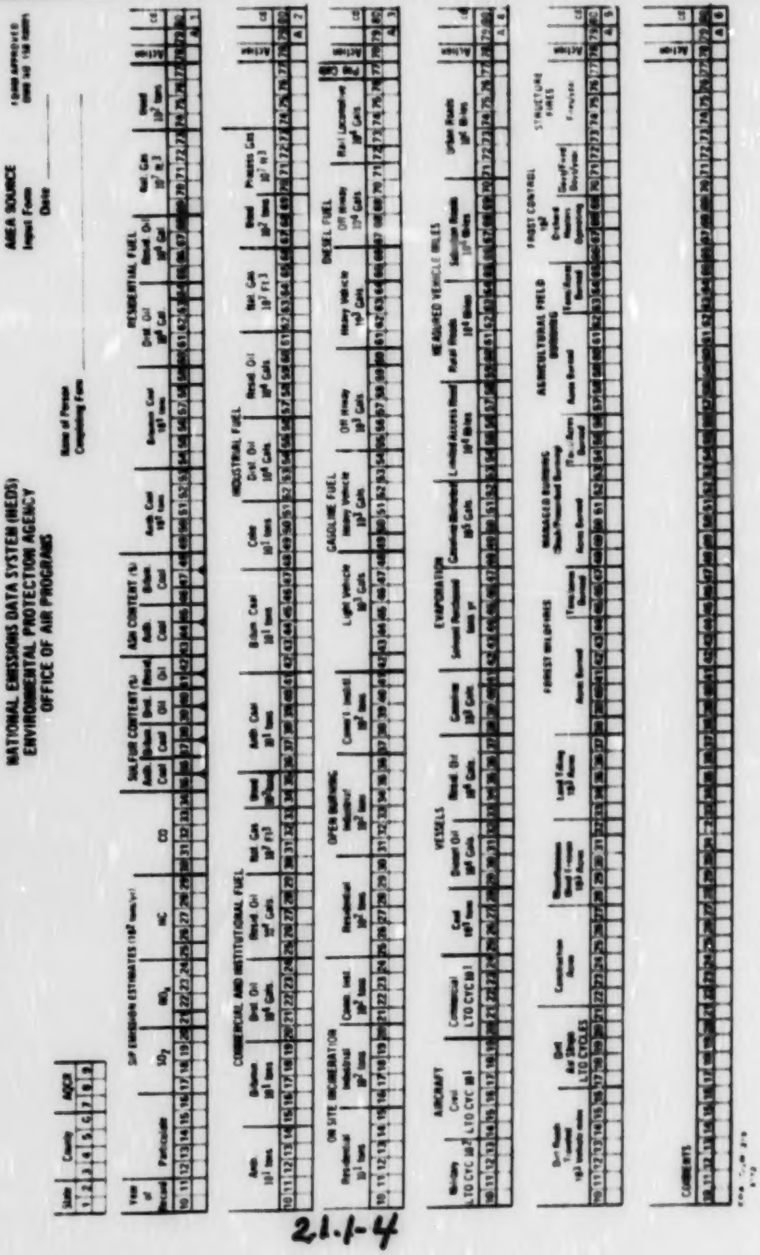
Since these major divisions sometimes span more than one section of the form, instructions will be provided by the major topics outlined above rather than section by section.

The group of spaces at the top of the form when filled in, provide an identification code number for the area under study. These spaces must be completed on every form filled in. Under certain circumstances, some portions of the remainder of the form may be left blank, but this identification code must be entered on every form.

Each major section of the form is divided into "fields," each defined by vertical lines extending above the space numbers. For example, in Section 1, spaces 10-11 represent the field for the "Year of Record;" in Section 5, spaces 10-16 represent the field for "Dirt Roads Traveled." Each field has a "field heading," describing the information to be entered. In some cases, several fields are grouped under an over-all heading, e.g., "SIP Emissions Estimates (10^2 tons/yr)." These spaces, however, are broken down into 5 fields, one for each major pollutant.

Spaces 79-80 of all sections must be coded with the proper symbols on all forms. Space 78 contains a computer action code from Table A-4, Volume V, 3.10.0. For initial submissions of data for a county, this code must be the letter 'A'. However, if a change or deletion of data is being prepared for a county for which data have previously been submitted, space 78 should be coded with a 'C' or 'D', as appropriate, to reflect the correct action. The 'C' code allows a change to the existing data in any field (except identification fields in spaces 1-9). To make a change, simply code the correct data in the appropriate field and code a 'C' in space 78. For area sources the 'D' code should be used only to delete all the existing data for a county. To do this, code a 'D' in space 78 of section (card) 1. The 'D' symbol should not be used in space 78 of other sections. A 'D' coded in space 78 of cards 2-7 is an error and will cause cards to be rejected in the edit process. Space 79 contains the letter 'A' to indicate that the data on this form refer to an area source. Space 80 contains a card sequence number (1 through 7) to indicate the section or card type. Spaces 79-80 will not be changed.

Sections (cards) 1-6 of the area source form must be completed for each county. These sections contain the basic area source data which are normally used to computer calculate the emissions for a county. In all data fields, entries must be right justified. It is optional to leave unused columns blank or to fill them with zeros. However, all key fields (spaces 1-9) must be completely filled in. Section 7 is an optional item which may be used to manually override the computer calculated emissions with hand calculated emissions and also to add emissions for unique source categories not shown in sections 1-6. Detailed procedures for use of this form are described in Section 3.1.1 of this volume.



NATIONAL EMISSIONS DATA SYSTEM (NEDS)
ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF AIR PROGRAMS

AREA SOURCE
Input Form

Figure 2.1.1-a. Area Source Input Form.

21.1-4

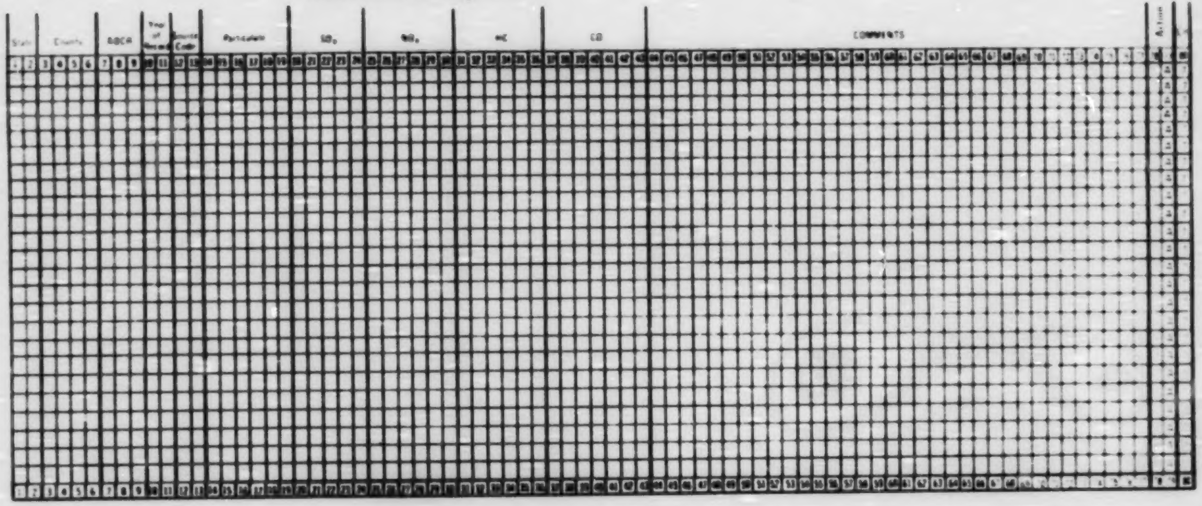
FORM APPROVED
OMB NO. 158 R0085

NATIONAL EMISSIONS DATA SYSTEM (NEDS)
ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF AIR PROGRAMS

AREA SOURCE
Input Form
Date __________

Name of Person Completing Form

SOURCE EMISSION ESTIMATES (tons/yr)



State
County
AQCR
Year of Record
Source Code
Particulate
SO_x
NO_x
HC
CO
COMMENTS
Action

Figure 2.1.1-a (continued). Area Source Input Form.

The NEDS point source form shown in Figure 2.1.2-a contains space for seven separate cards for each point source. At least one form should be completed for each point source. A point source is any stationary source with a potential of emitting more than 100 tons (90.7 metric tons) per year of any pollutant for which there is a national standard. Reference is made to the legally worded definition found in the Federal Register and/or the Code of Federal Regulations, (40 CFR 51.7).

Also included in a broader definition of point sources are sources included in a comprehensive permit or registration system already maintained by the agency, and/or sources for which a compliance schedule exists.

Source data required on the coding form are needed for the following reasons:

1. To locate the source geographically and to index it with respect to county, state, city and AQCR.
2. To describe the process and operating conditions of the source along with details on air pollution control equipment and emission characteristics.
3. To calculate emissions of particulates, SOx, hydrocarbons, NOx, and CO by means of current emission factors or available hard data.
4. To provide input data for mathematically modeling the local air quality; the modeling, in turn, allows an enforcing agency to develop control strategies on a rational basis after evaluating numerous combinations of possible alternatives.

5. To ascertain the legal status of each point source in complying with current pollution control regulations (i.e., allowable emissions, compliance schedules, and variances).

The layout of the seven cards on the form is such that data least likely to change are on the first cards, and data most likely to change are the last cards at the bottom of the coding form. This arrangement allows updating the point source data at a later time without rewriting the entire form. Moreover, the system is designed to facilitate recording of additional data that may be required. Such expansion as the need arises is necessary in compiling and maintaining a comprehensive inventory.

If a situation exists for a facility being coded that is not discussed in the description and preparation sections, refer to Section 3.1.2, Special Cases, Procedures, or Instructions.

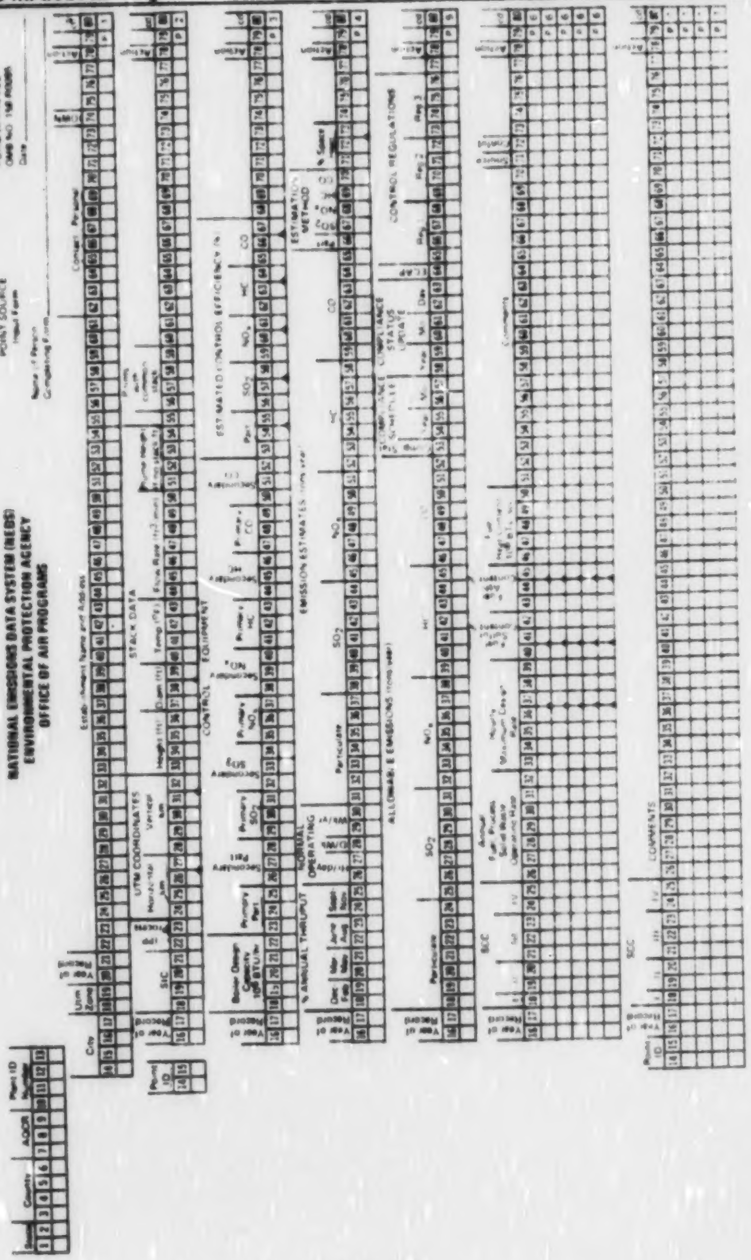

NATIONAL EMISSIONS DATA SYSTEM (NEDS)
ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF AIR PROGRAMS
POINT SOURCE
Input Form
FORM APPROVED
UTM COORDINATES
STACK DATA
CONTROL EQUIPMENT
ESTIMATED CONTROL EFFICIENCY (%)
EMISSION ESTIMATES (tons/year)
ESTIMATION METHOD
NORMAL OPERATING
ALLOWABLE EMISSIONS (tons/year)
COMPLIANCE SCHEDULE
COMPLIANCE STATUS UPDATE
CONTROL REGULATIONS
SCC
COMMENTS
Action

Figure 2.1.2-a. Point Source Form.

The SOTDAT Form shown in Figure 2.3.1-a is used to record data from source tests. The information is collected and recorded on an individual run where all data pertain to that particular test run. All test results on a particular run can be recorded for every pollutant sampled, measured, and/or analyzed. The form contains four major categories of data, each of which contains several data "fields."

1. Identification of plant and fuel data
   Card A 1 records such information as geography, run date, Source Classification Code (SCC), plant rates, and fuel data. The fields of data contain basic identification of the test run (plant I.D.'s being consistent with NEDS.)

2. Process stream parameters
   Cards B (1-2) record process stream parameters such as gas flow rate (volume and velocity), temperature, pressure, composition, molecular weight, and particle size data.

3. Pollutant test results
   Cards C (1-8) record pollutant test results and are the most important part of the system.

4. Control device data
   Cards D (1-9) contain all relevant control device information, including type, pollutant(s) controlled, control efficiency(ies), and certain design parameters.

5. Comments

Card E is used to record comments. Any pertinent remarks can (and should) be entered here, i.e., weather condition, plant operation techniques, process upsets, etc.

In addition to the data fields themselves, other important information that must appear on the form is:

------ Plant name, address, and telephone number (if not derived from proprietary sources)

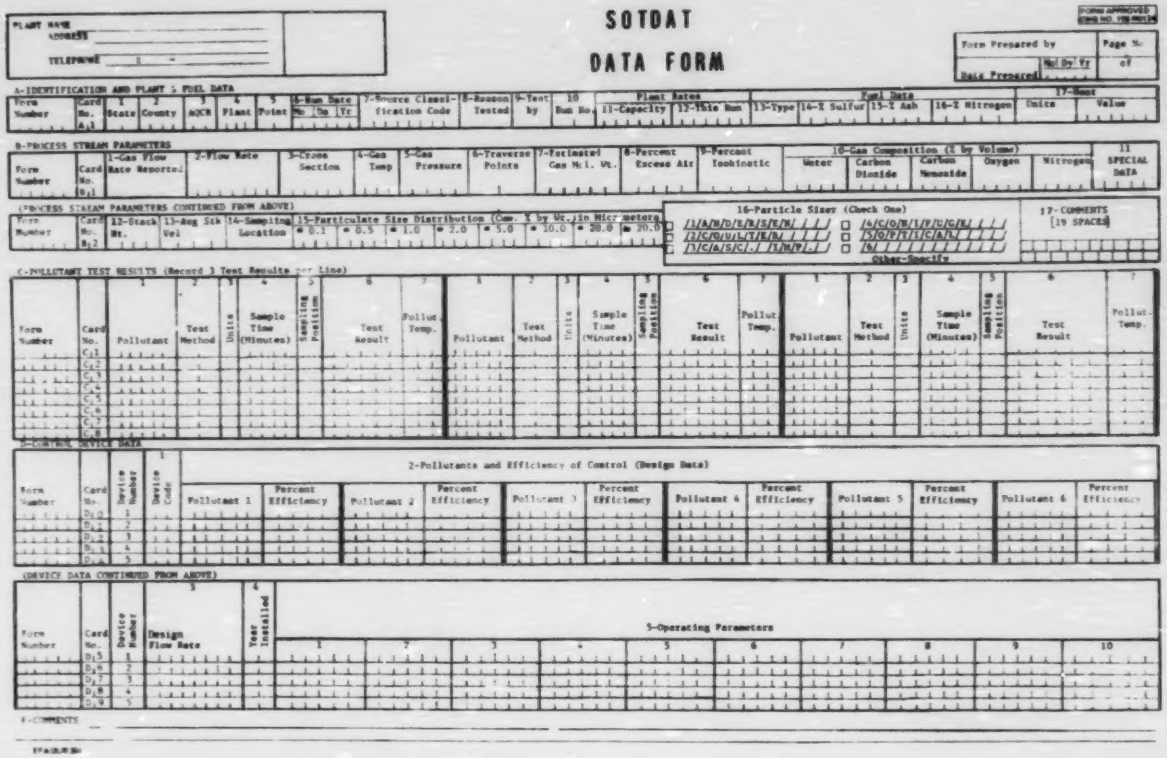
------ Name of person completing form

------ Date form prepared

------ Page number

------ Form number

These are further described in Section 3.3.1.



SOTDAT
DATA FORM

FORM APPROVED OMB NO. [illegible]

PLANT NAME ____
ADDRESS ____
TELEPHONE ( ) -

Form Prepared by ____ Page No. ____ of ____
Date Prepared Mo Dy Yr

A-IDENTIFICATION AND PLANT & FUEL DATA

Form Number	Card No. A,1	1 State	2 County	3 AQCR	4 Plant	5 Point	6-Run Date Mo Da Yr	7-Source Classification Code	8-Reason Tested	9-Test by	10 Run No.	Plant Rates 11-Capacity	Plant Rates 12-This Run	Fuel Data 13-Type	Fuel Data 14-% Sulfur	Fuel Data 15-% Ash	Fuel Data 16-% Nitrogen	17-Heat Units	17-Heat Value

B-PROCESS STREAM PARAMETERS

Form Number	Card No. B,1	1-Gas Flow Rate Reported	2-Flow Rate	3-Cross Section	4-Gas Temp	5-Gas Pressure	6-Traverse Points	7-Estimated Gas Mol. Wt.	8-Percent Excess Air	9-Percent Isokinetic	10-Gas Composition (% by Volume) Water	Carbon Dioxide	Carbon Monoxide	Oxygen	Nitrogen	11 SPECIAL DATA

(PROCESS STREAM PARAMETERS CONTINUED FROM ABOVE)

Form Number	Card No. B,2	12-Stack Ht.	13-Avg Stk Vel	14-Sampling Location	15-Particulate Size Distribution (Cum. % by Wt.)in Micrometers ≤ 0.1	≤ 0.5	≤ 1.0	≤ 2.0	≤ 5.0	≤ 10.0	≤ 20.0	≥ 20.0

16-Particle Sizer (Check One)
☐ /1/A/N/D/E/R/S/E/N/ / / /
☐ /2/C/O/U/L/T/E/R/ / / / /
☐ /3/C/A/S/C/./ /I/M/P/./ /
☐ /4/C/O/N/I/F/U/G/E/ / / /
☐ /5/O/P/T/I/C/A/L/ / / / /
☐ /6/ / / / / / / / / / / / /
Other-Specify

17-COMMENTS
[19 SPACES]

C-POLLUTANT TEST RESULTS (Record 3 Test Results per Line)

Form Number	Card No.	1 Pollutant	2 Test Method	3 Units	4 Sample Time (Minutes)	5 Sampling Position	6 Test Result	7 Pollut. Temp.	1 Pollutant	2 Test Method	3 Units	4 Sample Time (Minutes)	5 Sampling Position	6 Test Result	7 Pollut. Temp.	1 Pollutant	2 Test Method	3 Units	4 Sample Time (Minutes)	5 Sampling Position	6 Test Result	7 Pollut. Temp.
	C,1																					
	C,2																					
	C,3																					
	C,4																					
	C,5																					
	C,6																					
	C,7																					
	C,8																					

D-CONTROL DEVICE DATA

			1	2-Pollutants and Efficiency of Control (Design Data)											
Form Number	Card No.	Device Number	Device Code	Pollutant 1	Percent Efficiency	Pollutant 2	Percent Efficiency	Pollutant 3	Percent Efficiency	Pollutant 4	Percent Efficiency	Pollutant 5	Percent Efficiency	Pollutant 6	Percent Efficiency
	D,0	1													
	D,1	2													
	D,2	3													
	D,3	4													
	D,4	5													

(DEVICE DATA CONTINUED FROM ABOVE)

			3	4	5-Operating Parameters									
Form Number	Card No.	Device Number	Design Flow Rate	Year Installed	1	2	3	4	5	6	7	8	9	10
	D,5	1												
	D,6	2												
	D,7	3												
	D,8	4												
	D,9	5												

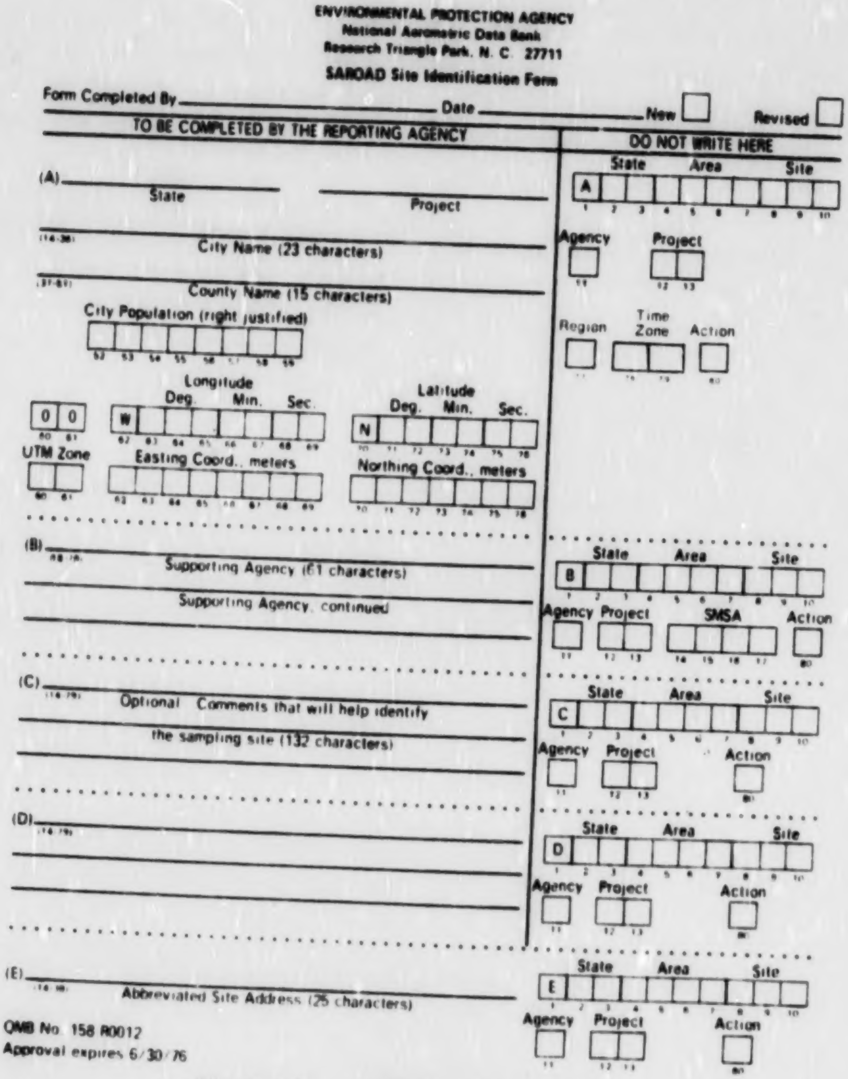
E-COMMENTS ____

Figure 2.3.1-a SOTDAT Data Form

The SAROAD Site Identification Form (Figure 2.4.1-a) is prepared in two separate operations. The left side of the form, front and back, is completed by the field organizations, and the form is submitted to EPA. EPA personnel will enter the appropriate data codes on the right side of the form, both front and back.

Great care must be taken to provide a complete description of the sites (and their surroundings) at which data are gathered, and to provide complete and accurate location data along with descriptions of the sampling methods and analytical procedures employed. This information will help to assure that data are not misinterpreted or misunderstood.

A supply of these forms should be printed and maintained by each Regional Office (AEROS contact) and made available to users.



ENVIRONMENTAL PROTECTION AGENCY
National Aerometric Data Bank
Research Triangle Park, N. C. 27711

SAROAD Site Identification Form

Form Completed By ____________ Date ____________ New ☐ Revised ☐

TO BE COMPLETED BY THE REPORTING AGENCY | DO NOT WRITE HERE

(A) ____________ State ____________ Project

A ☐☐☐☐☐☐☐☐☐ State Area Site

Agency ☐ Project ☐☐

____________ City Name (23 characters)

____________ County Name (15 characters)

City Population (right justified) ☐☐☐☐☐☐☐☐

Region ☐ Time Zone ☐☐ Action ☐

0 0 Longitude W Deg. Min. Sec. ☐☐☐☐☐☐☐

Latitude N Deg. Min. Sec. ☐☐☐☐☐☐

UTM Zone ☐☐ Easting Coord., meters ☐☐☐☐☐☐☐☐ Northing Coord., meters ☐☐☐☐☐☐☐

(B) ____________ Supporting Agency (61 characters)

____________ Supporting Agency, continued

B ☐☐☐☐☐☐☐☐☐ State Area Site

Agency ☐ Project ☐☐ SMSA ☐☐☐☐ Action ☐

(C) ____________ Optional Comments that will help identify

____________ the sampling site (132 characters)

C ☐☐☐☐☐☐☐☐☐ State Area Site

Agency ☐ Project ☐☐ Action ☐

(D) ____________

D ☐☐☐☐☐☐☐☐☐ State Area Site

Agency ☐ Project ☐☐ Action ☐

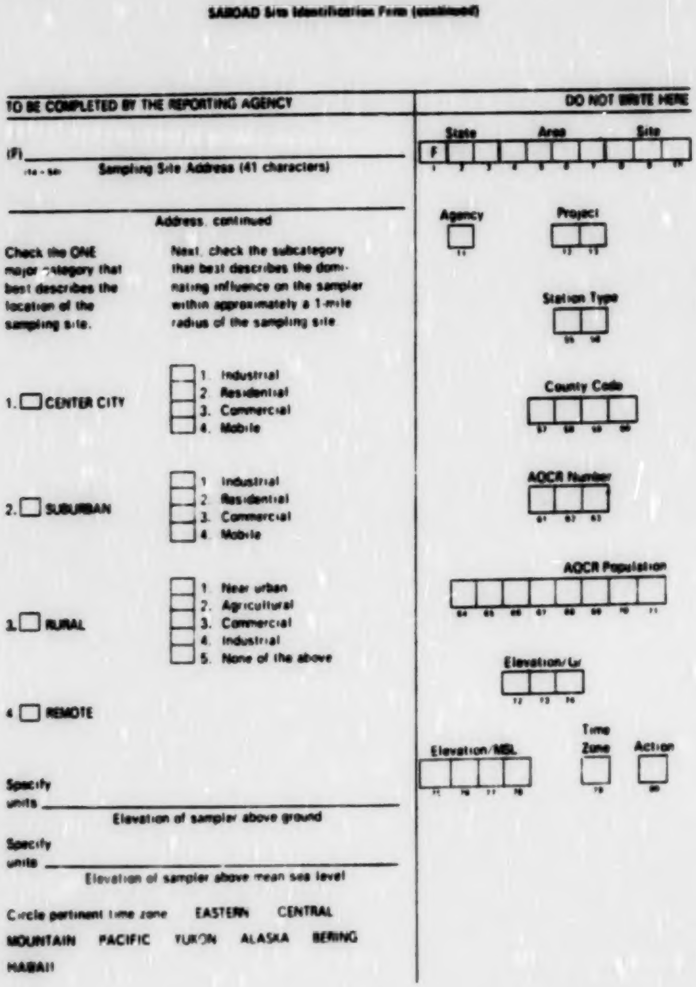
(E) ____________ Abbreviated Site Address (25 characters)

E ☐☐☐☐☐☐☐☐☐ State Area Site

Agency ☐ Project ☐☐ Action ☐

OMB No. 158 R0012
Approval expires 6/30/76

Fig 2.4.1-a. SAROAD Site ID Form.



SAROAD Site Identification Form (continued)

TO BE COMPLETED BY THE REPORTING AGENCY

DO NOT WRITE HERE

(F) ____________________

Sampling Site Address (41 characters)

____

Address, continued

Check the ONE major category that best describes the location of the sampling site.

Next, check the subcategory that best describes the dominating influence on the sampler within approximately a 1-mile radius of the sampling site.

1. ☐ CENTER CITY
   - ☐ 1. Industrial
   - ☐ 2. Residential
   - ☐ 3. Commercial
   - ☐ 4. Mobile
2. ☐ SUBURBAN
   - ☐ 1. Industrial
   - ☐ 2. Residential
   - ☐ 3. Commercial
   - ☐ 4. Mobile
3. ☐ RURAL
   - ☐ 1. Near urban
   - ☐ 2. Agricultural
   - ☐ 3. Commercial
   - ☐ 4. Industrial
   - ☐ 5. None of the above
4. ☐ REMOTE

Specify units ____________________

Elevation of sampler above ground

Specify units ____________________

Elevation of sampler above mean sea level

Circle pertinent time zone EASTERN CENTRAL MOUNTAIN PACIFIC YUKON ALASKA BERING HAWAII

State ☐F☐☐ Area ☐☐☐☐ Site ☐☐☐

Agency ☐

Project ☐☐

Station Type ☐☐

County Code ☐☐☐☐

AQCR Number ☐☐☐

AQCR Population ☐☐☐☐☐☐☐☐

Elevation/Gr ☐☐☐

Elevation/MSL ☐☐☐☐

Time Zone ☐

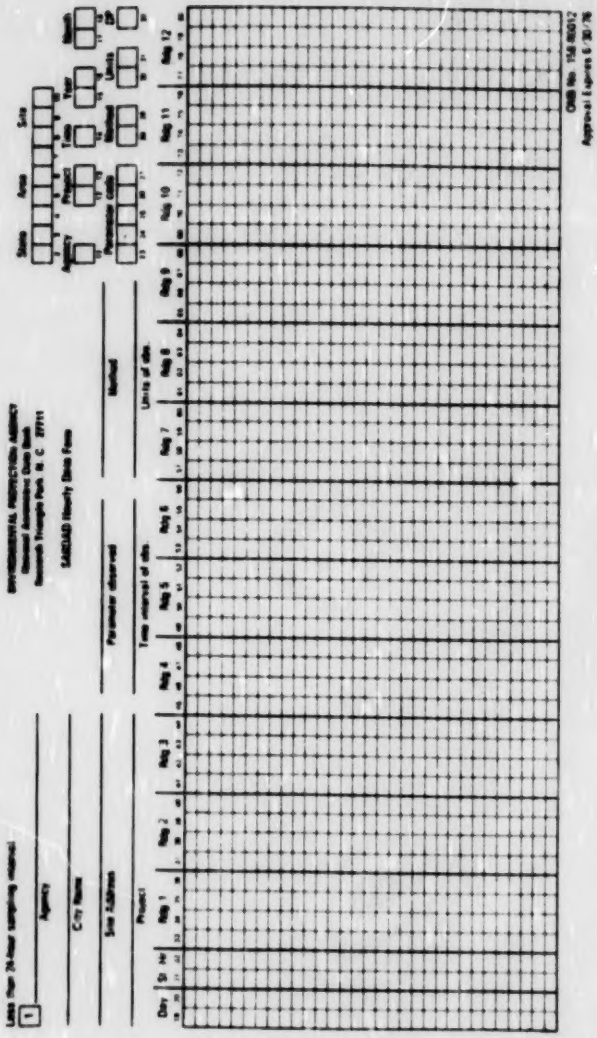
Action ☐

Figure 2.4.1-a (continued). SAROAD Site ID Form.

The SAROAD Hourly Data Form (Figure 2.4.2-a) is used for recording data observed or averaged at intervals of less than 24 hours. For example, it would be used for 2-hour coefficient of haze (COH) readings, and for 1-hour gaseous pollutant readings. For hourly data, two Hourly Data Forms will be needed per month.

A supply of these forms should be printed and maintained by each Regional Office (AEROS contact) and made available to users.

ENVIRONMENTAL PROTECTION AGENCY	**SECTION** Form Description	**SECTION** 2	**CHAPTER** 4	**SUBJECT** 2
NATIONAL AIR DATA BRANCH	**CHAPTER** Air Quality Data	**DATE** 12/15/76	**PAGE** 2	
VOLUME II. AEROS USER'S MANUAL	**SUBJECT** SAROAD Hourly Data Form			



ENVIRONMENTAL PROTECTION AGENCY
National Aerometric Data Bank
Research Triangle Park, N. C. 27711

SAROAD Hourly Data Form

☐ Less than 24-hour sampling interval

Agency
City Name
Site Address
Project
Parameter observed
Time interval of obs.
Method
Units of obs.

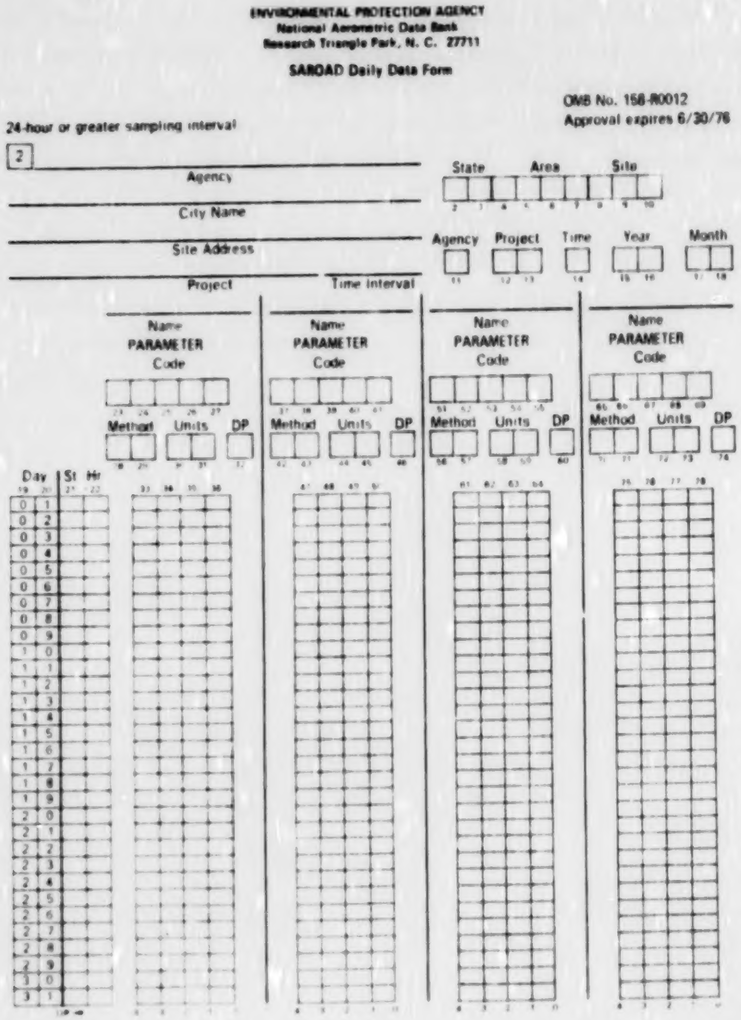
State ☐☐ Area ☐☐☐☐ Site ☐☐☐
Agency ☐ Project ☐☐ Time ☐ Year ☐☐ Month ☐☐
Parameter code ☐☐☐☐☐ Method ☐☐ Units ☐☐ DP ☐

Day
St Hr
Rdg 1
Rdg 2
Rdg 3
Rdg 4
Rdg 5
Rdg 6
Rdg 7
Rdg 8
Rdg 9
Rdg 10
Rdg 11
Rdg 12

Figure 2.4.2-a. SAROAD Hourly Data Form.

The SAROAD Daily Data Form (Figure 2.4.3-a) is a month's record of up to four different parameters observed at a common site over periods of 24 hours or longer. This form is useful for 24-hour hi-vol or gas bubbler data that are observed daily, every third day, every sixth day, or on any other random schedule. One form can be used for up to four parameters as long as the site, time interval, year, month, and starting hour are the same.

A supply of these forms should be printed and maintained by each Regional Office (AEROS contact) and made available to users.



ENVIRONMENTAL PROTECTION AGENCY
National Aerometric Data Bank
Research Triangle Park, N. C. 27711

SAROAD Daily Data Form

OMB No. 158-R0012
Approval expires 6/30/76

24-hour or greater sampling interval

2 Agency

City Name

Site Address

Project

Time interval

State Area Site

Agency Project Time Year Month

Name PARAMETER Code
Method Units DP

Name PARAMETER Code
Method Units DP

Name PARAMETER Code
Method Units DP

Name PARAMETER Code
Method Units DP

Day St Hr

01
02
03
04
05
06
07
08
09
10
11
12
13
14
15
16
17
18
19
20
21
22
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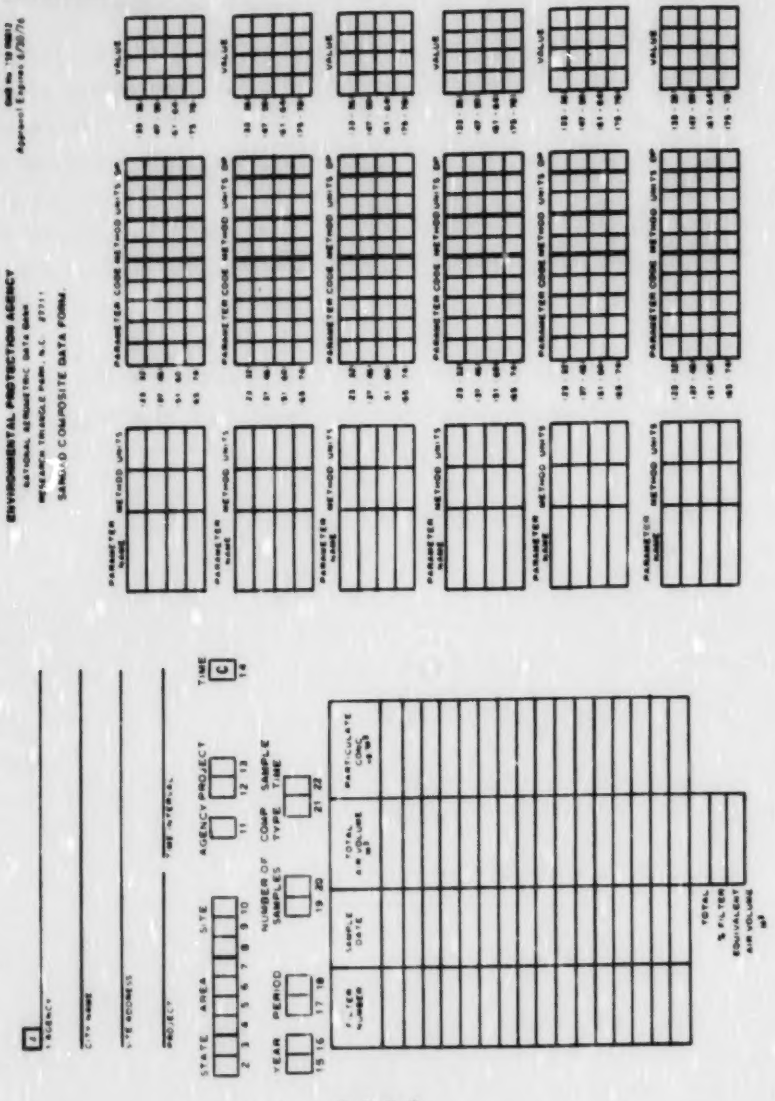
31

Figure 2.4.3-a SAROAD Daily Data Form

The SAROAD Composite Data Form (Figure 2.4.4-a) is used for recording those values resulting from analyses of a solution containing a number of individual samples that have been chemically combined or "composited." In analyzing for the hi-vol particulate fractions, only a portion of the filter is available. On a small amount of the filter it is possible that not enough of a pollutant is present to be detected. By combining all the filters for a month or quarter, it is possible to determine a value of the pollutant for that time period by analyzing the composite. A significant savings in manpower results from compositing. Since each composite usually combines portions of 5 to 10 individual filters, analysis of the composite provides an approximate value that in effect eliminates the need for 5 to 10 analyses. The Composite Data Form is not meant to supersede the Daily Data Form. Its use should be confined to those applications which will provide the greatest cost effectiveness in the recording of data.

A supply of these forms should be printed and maintained by each Regional Office (AEROS contact) and made available to users.



ENVIRONMENTAL PROTECTION AGENCY

SAROAD COMPOSITE DATA FORM

AGENCY

CITY NAME

SITE ADDRESS

PROJECT

TIME INTERVAL

STATE 2 3 AREA 4 5 6 7 SITE 8 9 10 AGENCY 11 PROJECT 12 13 TIME C 14

YEAR 15 16 PERIOD 17 18 NUMBER OF SAMPLES 19 20 COMP TYPE 21 SAMPLE TIME 22

FILTER NUMBER	SAMPLE DATE	TOTAL AIR VOLUME	PARTICULATE CONC

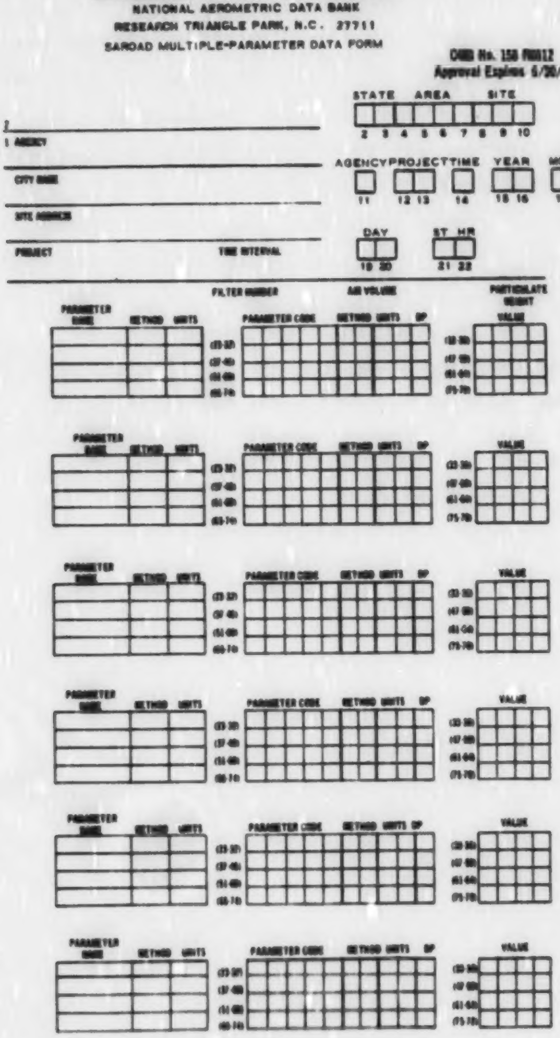
TOTAL % FILTER EQUIVALENT AIR VOLUME

PARAMETER NAME — METHOD UNITS — PARAMETER CODE METHOD UNITS DP — VALUE

Figure 2.4.4-a. SAROAD Composite Data Form.

The SAROAD Multiple-Parameter Data Form (Figure 2.4.5-a) can be used to record any data with a sampling interval of 24 hours or greater; its main advantage is that one form can accommodate 24 parameters. This form can be used for recording values when a hi-vol filter is analyzed for a number of sub-fractions. It is easy to store for later entries if further analyses are to be performed in the future. For this purpose, the form provides space to record a filter number (for cross-reference) and air volume.

A supply of these forms should be printed and maintained by each Regional Office (AEROS contact) and supplied to users.



ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AEROMETRIC DATA BANK
RESEARCH TRIANGLE PARK, N.C. 27711
SAROAD MULTIPLE-PARAMETER DATA FORM

OMB No. 158 R0012
Approval Expires 6/30/76

1 AGENCY

CITY NAME

SITE ADDRESS

PROJECT

TIME INTERVAL

STATE AREA SITE (2 3 4 5 6 7 8 9 10)

AGENCY (11) PROJECT (12 13) TIME (14) YEAR (15 16) MONTH (17 18)

DAY (19 20) ST HR (21 22)

FILTER NUMBER

AIR VOLUME

PARTICULATE WEIGHT

PARAMETER NAME METHOD UNITS

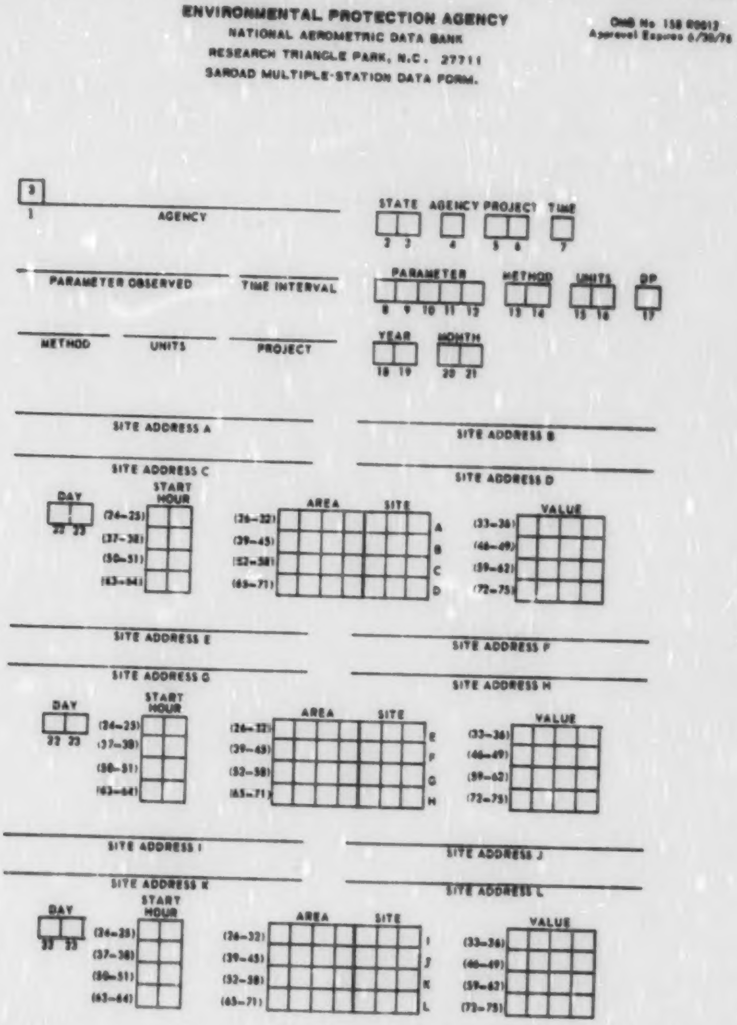
PARAMETER CODE METHOD UNITS DP

VALUE

Figure 2.4.5-a. SAROAD Multiple-Parameter Data Form.

The SAROAD Multiple-Station Form (Figure 2.4.6-a) is designed for recording data obtained at a sampling interval of 24 hours or greater for one parameter for up to 12 different sampling sites. A control agency operating a network of 30 dustfall buckets, for example, could use three of these forms, as opposed to using thirty daily forms to record a month's data.

A supply of these forms should be printed and maintained by each Regional Office (AEROS contact) and provided to users.



ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AEROMETRIC DATA BANK
RESEARCH TRIANGLE PARK, N.C. 27711
SAROAD MULTIPLE-STATION DATA FORM.

OMB No. 158 R0012
Approval Expires 6/30/76

3 (1) AGENCY

STATE (2 3) AGENCY (4) PROJECT (5 6) TIME (7)

PARAMETER OBSERVED

TIME INTERVAL

PARAMETER (8 9 10 11 12) METHOD (13 14) UNITS (15 16) DP (17)

METHOD

UNITS

PROJECT

YEAR (18 19) MONTH (20 21)

SITE ADDRESS A

SITE ADDRESS B

SITE ADDRESS C

SITE ADDRESS D

DAY (22 23) START HOUR (24–25) (37–38) (50–51) (63–64)

AREA SITE (26–32) A (39–45) B (52–58) C (65–71) D

VALUE (33–36) (46–49) (59–62) (72–75)

SITE ADDRESS E

SITE ADDRESS F

SITE ADDRESS G

SITE ADDRESS H

DAY (22 23) START HOUR (24–25) (37–38) (50–51) (63–64)

AREA SITE (26–32) E (39–45) F (52–58) G (65–71) H

VALUE (33–36) (46–49) (59–62) (72–75)

SITE ADDRESS I

SITE ADDRESS J

SITE ADDRESS K

SITE ADDRESS L

DAY (22 23) START HOUR (24–25) (37–38) (50–51) (63–64)

AREA SITE (26–32) I (39–45) J (52–58) K (65–71) L

VALUE (33–36) (46–49) (59–62) (72–75)

Figure 2.4.6-a. SAROAD Multiple-Station Data Form

The Data Quality Information Sheet for Air Pollution Agencies (Figure 2.5.1-a) is used to record quality assurance information for agencies. The sheet, which is on four pages, is divided into a section with 15 questions for all agencies to complete and an optional section with 8 questions to express agency opinion. One of these sheets would be completed for each agency in the state.

INTERIM
DATA QUALITY INFORMATION SHEET FOR
AIR POLLUTION AGENCIES

		State	Agency I.D.
__________________________ Agency Name	1 1	__ __ 2 3	__ __ __ 4 5 6
		Year	Month
__________________________ Agency Head or Designated Quality Control Officer (18 characters) 11-28		__ __ 7 8	__ __ 9 10

1. In the current fiscal-year period was there a formalized and operational quality control program in the agency? (Y or N) __ 29

   (a) How many whole year terms has a quality control program been in force? __ __ 30 31

2. Where there has been a formalized quality control program, in the latest fiscal year period,

   (a) Approximately what percent of the agency's budget was allocated to the quality control effort? __ __ 32 33

   (b) Approximately what percent of the agency's budget was allocated to the overall air monitoring effort? __ __ 34 35

   (c) For the above, is there a description of the program plan available? (Y or N) __ 36

3. In the air monitoring program are personnel employed who have a minimum of three hours of undergraduate training in:

   (a) Statistics? (Y or N) __ 37

   (b) Quality control? (Y or N) __ 38

   (c) Computer programming? (Y or N) __ 39

4. In the air monitoring program operations are data samples checked, as a necessary and routine step, in accordance with standardized procedures? (Y or N) __ 40

   If yes, is the method: (a) Computerized?
   (b) Manual? (A or B) __ 41

Figure 2.5.1-a. Data Quality Information Sheet for Air Pollution Agencies.

5. In the air monitoring operation what number of persons are assigned to review all incoming sampling data? (i.e. 1 thru 8; 9 for nine or more) ___ 42

6. Is it a matter of standard procedure that a ranking and knowledgeable officer of the agency review and approve all air data forms prior to submission to EPA? (Y or N) ___ 43

7. Does the agency each quarter year submit to EPA all air sampling data utilizing the SAROAD format? (Y or N) ___ 44

8. Is there a procedure description, flow diagram or other chart which shows a complete data sequence from point of acquisition to point of submission of data to EPA? (Y or N) ___ 45

9. How many times are data manually transcribed in the above (8) sequence? ___ 46 ___ 47

10. How is the actual transcription of values accomplished?

(a) by number copying
(b) by number dictation
(c) other, explain

___ 48

11. During quarterly air monitoring operations estimate the typical percent amount of sample data that is rejected as invalid, and thus not submitted to EPA (exclude equipment downtime due to calibration or maintenance). ___ 49 ___ 50

12. As a matter of procedure are air quality data routinely published by the agency? (Y or N) ___ 51

13. How many monitoring sites are maintained by the agency? ___ 52 ___ 53 ___ 54

14. Is there a documented procedure for the investigation of data anomalies? (Y or N) ___ 55

15. Are numberical computations routinely performed on the collected data? (Y or N) ___ 56

Figure 2.5.1-a (continued). Data Quality Information Sheet for Air Pollution Agencies.

Optional

Opinion Poll for Future EPA Planning

(Response by agency head or designated quality control officer)

1. In your opinion can a structured data quality control program be of value and benefit to overall agency goals? (Y or N) 57

2. Estimate the percent of the overall program budget, in your opinion, that should appropriately be devoted to a quality control program?

   (a) range, 1% to 5%
   (b) range, 6% to 10%
   (c) range, 11% to 15% 58
   (d) range, 16% or greater

3. Rank the agency's current or most recent quality control program.
   (a) very poor
   (b) poor
   (c) fair 59
   (d) good
   (e) superior

4. Order (rank as 1, 2, 3, 4 - 1 = highest)the following statements to reflect your opinion as to the factors that would improve the agency's data quality operations:

   Better qualified personnel 60

   Better instrumentation 61

   Better laboratory facilities 62

   Periodic audits of operating procedures or personnel 63

5. Similarly, order the statements to reflect the factor that results in a source of error in procedures of measurement of pollutants (i.e. 1=least 4=greatest):

   Calibration procedures 64

   Method of analysis 65

   Data reduction 66

   Operator 67

Figure 2.5.1-a (continued). Data Quality Information Sheet for Air Pollution Agencies.

6. Order the statements to reflect the increasing importance of factors for good data quality: (i.e. 1=most important, to 4=least important)

Personnel training ___ 68

Periodic audits of operations ___ 69

Use of control samples to test proficiency (i.e. mobile sampler in parallel to check equipment sampling of TSP) ___ 70

Proper procedures for maintenance and calibrations of instruments ___ 71

7. Rank the following pollutants (i.e. 1=most needed, to 6=least needed) to reflect where guidelines (EPA or other) are most needed for pollutant measurement method:

TSP ___ 72

HC ___ 73

CO ___ 74

Oxidant ___ 75

NO_2 ___ 76

SO_2 ___ 77

8. Is it your opinion that inspection, of operational equipment and operators, by other than agency officials would result in higher quality data? (Y or N) ___ 78

___ 80

Figure 2.5.1-a (continued). Data Quality Information Sheet for Air Pollution Agencies.

The Data Quality Information Sheet for Laboratories (Figure 2.5.2-a) is used to record quality assurance information for laboratories. The sheet, which is on two pages, has a section for laboratory name, address, city, and quality control officer and a section made up of 10 questions concerning laboratory quality assurance procedures. One of these sheets would be completed for each laboratory in the state.

DATA QUALITY INFORMATION SHEET FOR LABORATORIES

State Lab I.D.

____
Laboratory name (25 characters)
10-34

2̲ ___ ___ ___ ___
1 2 3 4 5

Year Month

____
Laboratory street address or PO Box
(25 characters) 35-59

___ ___ ___ ___
6 7 8 9

______________________________ ___
city (20 characters) 80
60-79

3
1 ______________________________
quality control officer for laboratory
(18 characters) 6-23

(cc 2-5 same as above)

1. If the laboratory performs functions other than the analyses of air samples, estimate the percent of time of analyses of air samples.

___ ___
24 25

2. Is a majority of lab equipment labelled according to its last inspection date and its due date for calibration? (Y or N)

___
26

3. How many persons does the laboratory employ for the current fiscal year program?

___ ___
27 28

4. Of the above, what number have attended formal courses on the analyses of air pollutants?

___ ___
29 30

5. For the above, rank the source of formal training most frequent = 1, least = 6:

Federal government sponsored ___
31

State government sponsored ___
32

Figure 2.5.2-a. Data Quality Information Sheet for Laboratories.

College undergraduate degree program ____ 33

College graduate degree program ____ 34

Professional, Training Association and other organizations ____ 35

Other (i.e. OJT) specify ____ 36

6. Are federal reference methods used: (Y or N)

(a) Total suspended particulates ____ 37

(b) Sulfur dioxide ____ 38

(c) Nitrogen dioxide ____ 39

(d) Total oxidant ____ 40

(e) Carbon monoxide ____ 41

(f) Total hydrocarbons ____ 42

7. Are replicates routinely made of colorimetric calibrations? (Y or N) ____ 43

8. Is an up-to-date record maintained of the standard deviations of the calibration curves slope and intercept? (Y or N) ____ 44

9. Are checks made to determine arithmetic errors in calculations for obtaining concentrations? (Y or N) ____ 45

10. Is performance quality control data documented in a bound book? (Y or N) ____ 46

____ 80

Figure 2.5.2-a (continued). Data Quality Information Sheet for Laboratories.

The Data Quality Information Sheet for Air Pollution Sites (Figure 2.5.3-a) is used to record quality assurance information for each site. The sheet, which is on two pages, contains spaces for the complete SAROAD site I.D. and 13 questions on the activities at the site. One of these sheets would be completed for each site operated by an agency.

DATA QUALITY INFORMATION SHEET FOR AIR POLLUTION SITES

		State	Area	Site	Agency
______________________________ agency operating site	4 1	__ __ 2 3	__ __ __ __ 4 5 6 7	__ __ __ 8 9 10	__ 11

Project	Agency I.D.
__ __ 12 13	__ __ __ 14 15 16

Year	Month
__ __ 17 18	__ __ 19 20

1. Which of the following are monitored at this site? (Y or N)	
Total Suspended Particulate	__ 21
Oxidant	__ 22
Non-methane Hydrocarbon	__ 23
Carbon Monoxide	__ 24
NO_2	__ 25
SO_2	__ 26
2. Are any other pollutants monitored at the site? (Y or N)	__ 27
3. Is the power supply voltage to the instruments regulated? (Y or N)	__ 28
4. Are manuals for every monitoring instrument readily available at the location of the sampling site? (Y or N)	__ 29
5. Are reference materials, such as handbooks, guidelines, and operating manuals available? (Y or N)	__ 30

Figure 2.5.3-a. Data Quality Information Sheet for Air Pollution Sites.

6. Is a logbook kept for the site? (Y or N) 31

If yes, (a) Does it contain information regarding calibration (Y or N)? 32

(b) Are daily entries made? (Y or N) 33

(c) Is an attempt made to record all events which might influence data quality? (Y or N) 34

7. The data acquisition system is:
   - (a) Completely automated
   - (b) Semi-automated
   - (c) Manual 35

8. If some portion of the system is not automated, are preprinted forms in use for recording data? (Y or N) 36

9. Are spot checks conducted to detect errors in manual transcription of data? (Y or N) 37

10. On the average, how often are rotameters cleaned?
    - (a) Once when installed
    - (b) Monthly
    - (c) Quarterly
    - (d) Annually 38
    - (e) Less frequent than annually

11. Have any of the current site operators attended courses dealing with air pollution instrumentation? (Y or N) 39

12. How many years has the site been in operation at its present location? (whole years) 40

13. Are all devices which are factory calibrated labelled with date of last calibration and date when recalibration is due? (Y or N) 41

80

Figure 2.5.3-a (continued). Data Quality Information Sheet for Air Pollution Sites.

The Data Quality Information Sheets for Total Suspended Particulate Measurement (Figure 2.5.4-a), SO_2 (Figure 2.5.4-b), NO_2 (Figure 2.5.4-c), CO (Figure 2.5.4-d), and Photochemical Oxidants (Figure 2.5.4-e) are used to record quality assurance information for individual pollutants. The sheet, which is on two pages for each pollutant, contains space for entering the SAROAD site ID and space to answer questions specific to each pollutant. For SO_2 and NO_2, a separate set of questions are answered depending on whether the sampling method is a continuous instrument or a gas bubbler. For particulate, the questions apply only to Hi-Vol samplers, and for CO and O_x, the questions apply only to continuous instruments. One of these sheets would be completed for each pollutant monitored at each site.

DATA QUALITY INFORMATION SHEET FOR
TOTAL SUSPENDED PARTICULATE MEASUREMENT (Hi-Vol sampler only)

	State	Area	Site	Agency
$\frac{5}{1}$	$\overline{2}$ $\overline{3}$	$\overline{4}$ $\overline{5}$ $\overline{6}$ $\overline{7}$	$\overline{8}$ $\overline{9}$ $\overline{10}$	$\overline{11}$

Project	Year	Month	Lab I.D.
$\overline{12}$ $\overline{13}$	$\overline{14}$ $\overline{15}$	$\overline{16}$ $\overline{17}$	$\overline{18}$ $\overline{19}$

1. Preprinted parameter code should correspond to that found in the SAROAD coding manual. $\frac{1}{20}$ $\frac{1}{21}$ $\frac{1}{22}$ $\frac{0}{23}$ $\frac{1}{24}$

2. Preprinted method code should correspond to that found in the SAROAD coding manual. $\frac{9}{25}$ $\frac{1}{26}$

3. Print brand name and model number of sampler used to monitor TSP at the site.

   ____
   sampler brand
   (20 characters) 27-46

   ____
   model no. (10 characters)
   47-56

   Is a second sampler available or presently in use at the site? (Y or N) $\overline{57}$

4. Are the filters checked randomly for surface alkalinity? (Y or N) $\overline{58}$

5. Are the filters visually inspected for imperfection? (Y or N) $\overline{59}$

6. Are filters conditioned before initial and final weighing? (Y or N) $\overline{60}$

7. Are envelopes or folders in use for transporting filters? (Y or N) $\overline{61}$

8. Are flow rates measured before and after sampling period? (Y or N) $\overline{62}$

9. If the answer to #8 is yes, using the equation below what is the estimated average percent of change in the flow rates? Use the equation

$$\frac{100\,(Q_i - Q_f)}{Q_i} = \text{percent change}$$

(a) Less than 10%
(b) 10-20%
(c) greater than 20%

$\overline{63}$

Figure 2.5.4-a. Data Quality Information Sheet, Particulates.

10. Are all weighings and serial numbers of filters kept in a logbook at the laboratory? (Y or N) ___ 64

11. Is there a logbook at each sampler to record flows and times? (Y or N) ___ 65

12. Enter the letter corresponding to the statement below that most closely estimates the frequency of flow rate calibration? ___ 66

    (a) once when first purchased
    (b) once when purchased then after every sampler modification
    (c) once when purchased then at regular intervals thereafter

13. What is the approximate time delay between sample collection and final weighing? (answer in days) ___ 67 ___ 68

___ 80

Figure 2.5.4-a (cont.). Data Quality Information Sheet, Particulates.

DATA QUALITY INFORMATION SHEET FOR
SO_2 MEASUREMENT

	State	Area	Site	Agency
6/1	2 3	4 5 6 7	8 9 10	11
	Project	Year	Month	Lab I.D.
	12 13	14 15	16 17	18 19

1. Preprinted parameter code should correspond to that found in the SAROAD coding manual — 4/20 2/21 4/22 0/23 1/24

2. Enter method code from SAROAD coding manual. — 25 26

3. Print brand name and model number of sampler used to monitor SO_2 at the site.

sampler brand
(20 characters) 27-46

model number (10 characters)
47-56

Is a second sampler available or presently in use at the site? (Y or N) — 57

4. Enter measured minimum detectable concentration for the main sampler in ppm. Note that decimal point occurs in the first blank. — .58 59 60 61 62

5. Are spot checks randomly conducted using control samples to audit the performance of the entire system? (Y or N) — 63

6. Are calculations or estimates made of the precision of the results in order to put bounds on the reported data, i.e. .08 ± .008 ppm? (Y or N) — 64

FOR CONTINUOUS SAMPLERS ONLY

7. Enter the letter corresponding to the statement below which most closely estimates the frequency of zero and span calibrations? — 65
   - (a) daily
   - (b) every 2-3 days
   - (c) weekly
   - (d) less than weekly
   - (e) not possible

Figure 2.5.4-b. Data Quality Information Sheet, SO_2.

8. Enter the letter corresponding to the statement below which most closely estimates the frequency of multipoint calibrations: 66
   - (a) biweekly
   - (b) monthly
   - (c) quarterly
   - (d) less than quarterly
   - (e) never

9. Is a logbook maintained for the analyzer? (Y or N) 67

10. Are spot checks made to assess the data reduction errors? (Y or N) 68

11. Is a dynamic calibration usually performed rather than a static one? (Y or N) 69

12. Are SO_2 permeation tubes used? (Y or N) 70

    If yes, are repeated permeation rate determinations made? (Y or N) 71

13. If SO_2 permeation tubes are used, how are they calibrated? 72
    - a) National Bureau of Standards
    - b) Factory
    - c) In-house

FOR BUBBLER SAMPLERS ONLY

14. Is sampling train routinely checked for leaks? (Y or N) 73

    How often?
    - a) once a week
    - b) once a month
    - c) once a quarter

15. Is flow controlled by limited orifice? (Y or N) 74

16. Is limited orifice calibrated a) on site b) in laboratory 75

17. Are working standards prepared the same day that samples are analyzed? (Y or N) 76

18. Are calibrations curves run on the same day as the sample analysis? (Y or N) 77

78

80

Figure 2.5.4-b (cont.). Data Quality Information Sheet, SO_2.

DATA QUALITY CONTROL INFORMATION SHEET FOR
NO_2 MEASUREMENT

	State	Area	Site	Agency
7 1	2 3	4 5 6 7	8 9 10	11

Project	Year	Month	Lab ID
12 13	14 15	16 17	18 19

1. Preprinted parameter code should correspond to that found in the SAROAD coding manual. — 4 2 6 0 2 (20 21 22 23 24)

2. Enter method code from SAROAD coding manual. — 25 26

3. Print brand name and model number of sampler used to monitor NO_2 at the site.

   sampler brand (20 characters) 27-46

   model no. (10 characters) 47-56

   Is a second sampler available or presently in use at the site? (Y or N) — 57

4. Enter measured minimum detectable concentration for the main sampler in ppm. Note that decomal point occurs in the first blank. — 58 59 60 61 62

5. Are permeation tubes used for calibration? (Y or N) — 63

   If yes, are repeated permeation rate determinations made? (Y or N) — 64

6. Are spot checks conducted randomly using control samples to audit the performance of the entire system? (Y or N) — 65

7. Are any calculations or estimates made of the precision of the results to put bounds on reported data, i.e. .05 ± .002 ppm? (Y or N) — 66

FOR BUBBLER SAMPLERS ONLY

8. Is sampling train routinely checked for leaks? (Y or N) — 67

   How often?
   - a) once a week
   - b) once a month
   - c) once a quarter

   — 68

Figure 2.5.4-c. Data Quality Information Sheet, NO_2.

9. Is flow controlled by limited orifice? (Y or N) ‾69

10. Is limited orifice calibrated a) on site
b) in laboratory ‾70

FOR CONTINUOUS SAMPLERS ONLY

11. Enter the letter corresponding to the statement below which most closely estimates the frequency of zero and span calibrations: ‾71

a) daily
b) every 2-3 days
c) weekly
d) less than weekly
e) not possible

12. Enter the letter corresponding to the statement below which most closely estimates the frequency of multipoint calibrations: ‾72

a) biweekly
b) monthly
c) quarterly
d) less often than quarterly
e) never

13. Is a logbook maintained for the analyzer to include calibration data, downtime, and comments? (Y or N) ‾73

14. Are spot checks made to assess data reduction errors? (Y or N) ‾74

‾80

Figure 2.5.4-c (cont.). Data Quality Information Sheet, NO_2.

DATA QUALITY CONTROL INFORMATION SHEET FOR CO MEASUREMENT

	State	Area	Site	Agency
8 1	2 3	4 5 6 7	8 9 10	11

Project	Year	Month	Lab I.D
12 13	14 15	16 17	18 19

1. Preprinted parameter code should correspond to that found in the SAROAD coding manual. 4 2 1 0 1 (20 21 22 23 24)

2. Enter method code from SAROAD coding manual. ___ ___ (25 26)

3. Print brand name and model number of sampler used to monitor CO at the site.

   ________ sampler brand (20 characters) 27-46

   ________ model no. (10 characters) 47-56

   Is a second sampler available or presently in use at the site? (Y or N) ___ 57

4. Enter measured minimum detectable concentration for the main sampler in ppm. Note that decimal point occurs in the first blank. ___ ___ ___ ___ ___ (58 59 60 61 62)

5. Are calibration gases checked for accuracy when purchased? (Y or N) ___ 63

6. If the NDIR method is used, are regular checks made to determine interference from water vapor? (Y or N) ___ 64

7. Is strip chart data regularly spot-checked for data reduction errors? (Y or N) ___ 65

8. Enter the letter corresponding to the statement below which most closely estimates the frequency of zero and span calibrations: ___ 66
   - a) daily
   - b) every 2-3 days
   - c) weekly
   - d) less than weekly
   - e) never

Figure 2.5.4-d. Data Quality Information Sheet, CO.

9. Enter the letter corresponding to the statement below which most closely estimates the frequency multipoint calibrations: ___ 67

   a) biweekly
   b) monthly
   c) quarterly
   d) less than quarterly
   e) never

10. Is a logbook maintained for the analyzer to include calibration data, downtime, and comments? (Y or N) ___ 68

11. Are any calculations or estimates made of the precision in order to put bounds on reported data, i.e. 5 ± .5 ppm? (Y or N) ___ 69

12. Are spot checks randomly conducted using control samples to audit the performance of the entire system? (Y or N) ___ 70

___ 80

Figure 2.5.4-d (cont.). Data Quality Information Sheet, Co.

DATA QUALITY CONTROL INFORMATION SHEET
FOR PHOTOCHEMICAL OXIDANT MEASUREMENT

	State	Area	Site	Agency
9 (1)	___ ___ (2 3)	___ ___ ___ ___ (4 5 6 7)	___ ___ ___ (8 9 10)	___ (11)
	Project	Year	Month	Lab I.D.
	___ ___ (12 13)	___ ___ (14 15)	___ ___ (16 17)	___ ___ (18 19)

1. Preprinted parameter code should correspond to that found in the SAROAD coding manual. — 4 4 1 0 1 (20 21 22 23 24)

2. Enter method code from SAROAD coding manual — ___ ___ (25 26)

3. Print brand name and model number of sampler used to monitor oxidants at the site.

   ______________ sampler brand (20 characters) 27-46

   ______________ model no. (10 characters) 47-56

   Is a second sampler available or presently in use at the site? (Y or N) — ___ (57)

4. Enter measured minimum detectable concentration for the main sampler in ppm. Note that the decimal point occurs in the first blank. — ___ ___ ___ ___ ___ (58 59 60 61 62)

5. Enter the letter corresponding to the statement below which is the best estimate of the frequency of ozone source calibration: — ___ (63)
   a) more frequently than analyzer
   b) at same time as analyzer
   c) less frequently than analyzer

6. Are any calculations or estimates made of the precision of the results in order to put bounds on the reported data, i.e. .01 ± .001 ppm? (Y or N) — ___ (64)

7. Are spot checks conducted randomly using control samples to audit the performance of the entire system? (Y or N) — ___ (65)

Figure 2.5.4-e. Data Quality Information Sheet, O_x.

FOR CONTINUOUS SAMPLERS ONLY

8. Enter the letter corresponding to the statement below which most closely estimates the frequency of zero and span calibrations: ___ 66

   a) daily
   b) every 2-3 days
   c) weekly
   d) less than weekly
   e) never

9. Enter the letter corresponding to the statement below which most closely estimates the frequency of multipoint calibrations: ___ 67

   a) biweekly
   b) monthly
   c) quarterly
   d) less than quarterly
   e) never

10. Is a logbook maintained for the analyzer to include calibration data, downtime, and comments? (Y or N) ___ 68

11. Are spot checks made to assess data reduction errors? (Y or N) ___ 69

___ 70

___ 80

Figure 2.5.4-e (cont.). Data Quality Information Sheet, O_x.

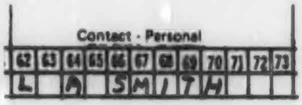
Data to be input to the various AEROS Systems comes from a wide variety of sources and covers a full range of technical parameters. Certain basic conventions exist relating to the coding of aerometric data into the systems. These conventions and guidelines are presented below in summarized form.

All collected data must be reduced to standard formats to allow for the most economical and efficient methods of conversion to machine readable media.

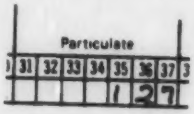
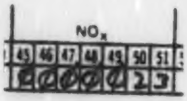
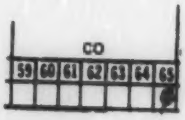
There are several forms specified for the recording of AEROS data. The data thus recorded will be converted into machine readable media as input to AEROS. Because a high proportion of ADP reporting errors are attributable to erroneous input data, it is essential that the highest degree of accuracy be maintained throughout the recording process.

The preparation of data for computer processing entails the use of certain specialized conventions and terminology. The more common ones, and those that are referenced throughout the detailed forms preparation instructions, are as follows:

TERM	DESCRIPTION
Left justify	The first or left-most data character is entered in the left-most position of the specified field Entry of data continues from left to right until the field is full or all data have been entered. Any character spaces on the form remaining unfilled are left blank unless the instructions for the field specify otherwise.



Contact - Personal											
62	63	64	65	66	67	68	69	70	71	72	73
L		A		S	M	I	T	H			

TERM	DESCRIPTION
Right justify	The last or right-most data character is entered in the right-most position of the specified field. Entry of data continues from right to left until the field is full or all data have been entered. Any character spaces on the form remaining unfilled are left blank, unless the instructions for the field specify otherwise. 
Leading zeros	When specified, numeric zeros are entered in all spaces in the specified field to the left of the first significant data character. 
Low order position	Right-most character position of a field. 

In the interest of legibility and as an aid to accuracy in the recording of data, all entries on forms should be made in block capital letters. The use of punctuation marks should be kept to a minimum and certain character conventions, as noted below, should be followed.

Character Written As	Description
0	Numeral zero
O	Letter "Oh"
I	Numeral one
L	Letter "L"
2	Numeral two
Z	Letter "Zee"

Instructions for completing each form are quite specific. Please follow all instructions exactly. The data entered on the coding form is the data that will be punched into a computer card - no more, or less.

No data may be entered in a field except that which the heading specified.
Data field headings are absolute and may not be altered.
Original forms only will be submitted. No xerox copies.
No notes will be written on the face of the form.
Only specified alphabetic or numeric characters are allowed to be entered on the form.
No unusual marks will be made.
Blanks equal no data or invalid data (prohibited where indicated).
0000 equals data readings below minimum detectable (SAROAD).
0000, 0000, 0000 is an acceptable entry to indicate a series of readings below minimum detectable.

Strict adherence to these instructions will materially reduce the incidence of data error.

Any questions in connection with the use of these forms should be addressed to

Monitoring and Data Analysis Division
National Air Data Branch (MD-14)
Research Triangle Park, NC 27711

Emissions from sources too small or too difficult to be surveyed individually are reported collectively as "area sources." The object of area source calculation is to obtain as accurate an estimate as possible of this collective contribution to total emissions. In the NEDS Area Source format, each county or county equivalent (parish, census division, independent city, etc., for states where counties are not used) represents the smallest region for which area source emissions are calculated.

This chapter presents the techniques to be used both for estimating area source quantities and for completing the Area Source Input Form shown in Figure 3.1.1-a. The description for each area source discusses the data collection methods that are used to obtain area source totals, and states how to fill out the area source coding form and how to apportion the county totals to the proper source categories.

At present there are no EPA requirements for state submittal of area source emissions data in the NEDS area source format. The National Air Data Branch (NADB) serves as the chief originator and verifier of the data in the NEDS area source data bank. NADB welcomes voluntary submittal by state and local agencies of area source data that are an improvement over the data generated internally. Originally the data incorporated into the NEDS area source data bank were collected according to the procedures outlined in Chapter 5, APTD-1135.[1] This work was accomplished by in-house NADB efforts and NADB contractors and produced data that were representative of the years 1969 to 1971. Subsequently all of these data have been updated through in-house efforts to a common year of record, 1972.

For future maintenance of the area source data base, NADB plans an annual update of the area source data. This update is to be completed by the second May following the calendar year for which the data were collected. For instance, in May 1976, the data base is scheduled to be updated to reflect calendar year 1974. This time lag is necessitated because publications required to perform the update are not available until late in the year. To simplify the updating procedure, the methodology for reporting data is being computerized for a number of area source categories. Computerized methods are developed for reporting area source residential, commercial-institutional, and industrial use of coal, oil, natural gas, and LPG; highway use of gasoline and diesel fuel; railroad fuel use; off-highway fuel use; vessel fuel use; and for estimating total gasoline consumption and organic solvent use.

In addition to the computerized effort, data have been collected for area source categories from where data in NEDS were previously missing or incomplete. These categories include forest wildfires, slash and prescribed burning, agricultural burning, unpaved roads and airstrips, agricultural land tilling, and heavy construction sites. New emission factors have been developed for these categories. These data will be incorporated into the data bank at the time of the 1973 update. For the remaining categories, NADB will update the data manually using in-house personnel.

PROCEDURES FOR STATE/LOCAL AGENCY DATA SUBMITTALS

NADB recognizes that in certain cases state and local agencies, through their specific knowledge of local situations, can provide more accurate area source data than those determined by NADB. Therefore, in order to improve the quality of the data base, such data submittals are encouraged. To avoid unnecessary duplication of effort, state and local agencies contemplating such data submittals should be aware of the NADB programs for reporting area source data. It is not worth the effort involved for a state or local agency to prepare area source data that are inferior to or duplicate the data prepared by NADB. It is very helpful, however, for state and local agencies to submit data which will improve upon or supplement the data generated by NADB. It is asked that the following guidelines be followed when submitting area source data:

1. The data must be submitted in the standard NEDS area source format, either on coding forms, punched cards, or card image tape.
2. Data from state/local agencies should be submitted to the appropriate EPA Regional Office, which, in turn, will forward the data to NADB.
3. If necessary, appropriate documentation should accompany the data to indicate the source of the data and how the data were derived.

There are numerous reasons for requiring documentation to accompany the data. First, NADB must have some criteria to determine whether the data submitted are in fact an improvement over the existing NADB data. Second, NADB must be able to answer questions concerning the data base. If no references are available, NADB can only refer the questioner to the agency that supplied the data. In addition, NADB is interested in identifying new sources of information which may be useful for refinement of the present methods for reporting area source data. The documentation does not need to be extensive. If the area source data are calculated based on other data, include a sample calculation to show the method for deriving the area source data. It is not necessary to submit extensive sheets of calculations or all the intermediate data used in calculations, since determination of the method used to derive the data is the prime consideration.

SUGGESTED DIRECTION FOR STATE/LOCAL DATA COLLECTION

It is suggested that state or local agencies devote their efforts in the direction of providing data for source categories not covered by the NADB computerized techniques. In many cases, however, improvements can be made to the data provided by the computerized techniques by contacting local fuel dealers to determine local fuel consumption or conducting surveys of organic solvent users. We anticipate that more improvement in the overall quality of the data could be obtained through local input into such categories as solid waste burning or measurement of vehicle miles.

The following sections, which cover the procedures for coding and collection of area source data for the NEDS, emphasize the general techniques which may be used by a state or local agency to make improvements upon the area source data prepared by NADB. It is not intended that the methods discussed therein represent a complete list of all methods which may be used for the collection of area source data. Other sources of data known to state and local agencies may be excellent sources of information. Use of other data sources is encouraged if such use will provide more accurate, detailed data than could be obtained through the standard techniques. Use of all such techniques should be properly documented, however, according to the criteria previously noted.

Finally, the following sections also briefly describe the methods used by NADB for area source data preparation so that state and local agencies can evaluate the data and decide which source categories can be improved through their own efforts. A detailed description of the NADB area source methodology is given in AEROS Manual Volume IV, the NADB Internal Operations Manual.[2] Certain portions of the methodology are also discussed in the various references cited in the following sections.

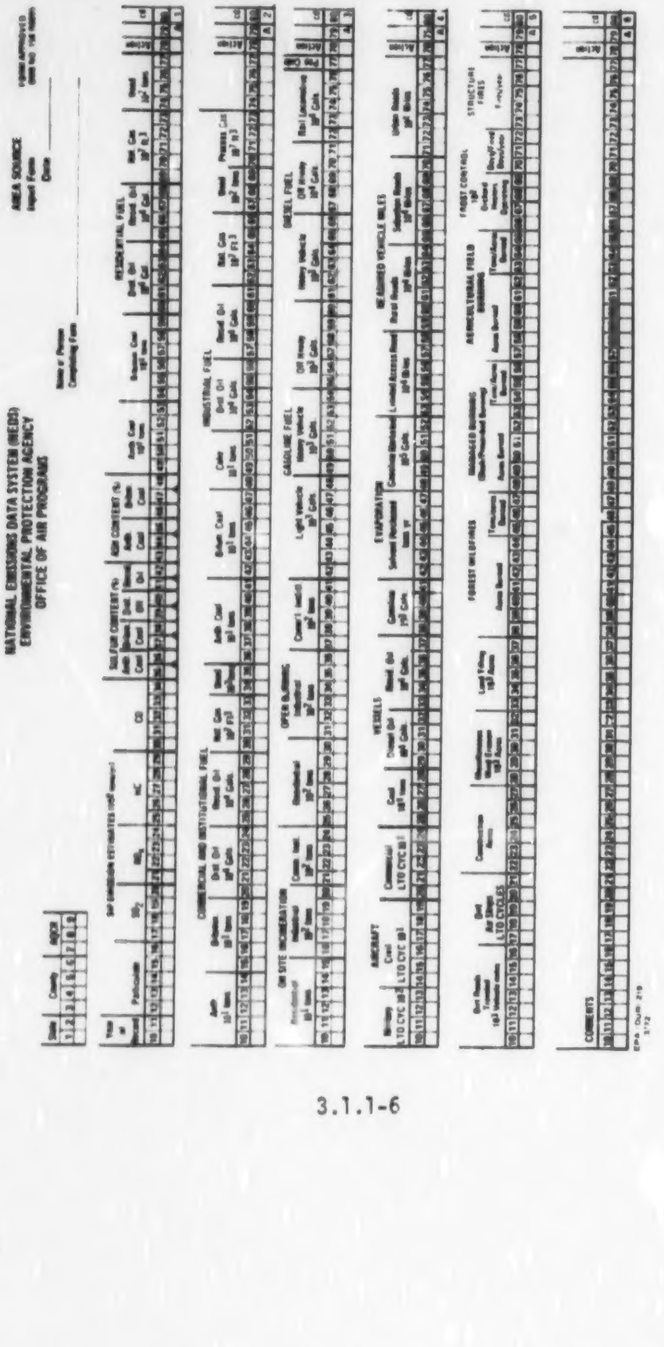


Figure 3.1.1-a. Area Source Input Form.

GENERAL CODING REQUIREMENTS

The following sections specify proper procedures for coding of information into the Area Source Input Form. See Section 2.1.1 for a description of the form.

CODING PROCEDURES FOR IDENTIFICATION SPACES

The group of spaces at the top of the form, when filled in, provides an identification code number for the area under study. These spaces must be completed on every form filled in. Under certain circumstances, some portions of the remainder of the form may be left blank, but this identification code must be entered on every form. No blanks are allowed in any identification space.

CODING PROCEDURES FOR DATA FIELDS

Each major section of the form is divided into "fields," each defined by vertical lines extending above the space numbers. For example, in Section 1, spaces 10-11 represent the field for the "Year of Record," in Section 5, spaces 10-16 represent the field for "Dirt Roads Traveled." Each field has a "Field heading," describing the information to be entered. In some cases, several fields are grouped under an overall heading. For example, Section 1, spaces 12-34 bear the heading "SIP Emissions Estimates." These spaces, however, are broken down into five fields, one for each major pollutant.

All fields, with the exception of comments and action code, are to be coded with numeric characters only. Comments (spaces 10-77, section 6, and spaces 44-77, card 7) may contain either alphabetical or numeric characters. Action codes (space 78 of all sections) should be coded only with the appropriate alphabetical character. Entries in all numeric only fields must be right justified. Decimal points may not be inserted in any numeric field. Only those pre-printed decimal locations for sulfur and ash content data (spaces 35-48, section one) may be used. A zero in any field will be interpreted as an actual data value of zero. If source activity is unknown, but not zero, leave the field spaces blank.

CODING OF ACTION CODES

Spaces 78-80 of all sections must be coded with the proper symbols on all forms.[3] Space 78 contains an entry from the computer Update Action code table in Volume V, Section 3.10.0. For initial submission of data for a county, this code will be the letter "A." However, if a change or deletion of data is being prepared for a county for which data have previously been submitted, space 78 will be coded as a "C" or "D," as appropriate, to reflect the correct action.

This "C" code allows a change to the existing data in any Field (except identification Fields in spaces 1-9) To make a change, simply code the correct data in the appropriate Field and code a "C" in space 78. Nearly all area source data submittals should use the "C" action code.

For area sources the "D" code should be used only to delete all the existing data for a county. To do this code a "D" in spaces 78 of section (card) 1. The "D" symbol should not be used in space 78 of the other sections.

Space 79 contains the letter "A" to indicate that the data on this form refer to an area source. Space 80 contains a card sequence number

(1 through 7) to indicate the section or card type. Spaces 79-80 will not be changed. Sections (cards) 1-6 contain the basic area source data. All cards must have the basic identification spaces 1-9 completed. In addition spaces 78-80 of each section 1-6 must be completed. Section 7 is optional and does not need to be completed for each county.

USE OF PROPER AREA SOURCE FORMAT

The NEDS area source format shown in Figure 3.1.1-a is a redesign of an earlier area source form which is illustrated in Guide for Compiling a Comprehensive Emission Inventory (APTD-1135).[1] The form shown in APTD-1135 has been replaced by the form shown in Figure 3.1.1-a. All submittals of area source data for NEDS should be in the format of Figure 3.1.1-a, although the old format can be used in special cases.

REFERENCES AND CODE TABLES

Volume V contains code tables which are used for completing certain portions of the area source form. In addition, several references are required for other fields. These references are listed at the end of the chapter and are cited by number throughout the instructions.

DATA COLLECTION AND CODING METHODOLOGY

AREA IDENTIFICATION DATA

State (Spaces 1-2). Enter the two-digit code for the state within which the county is located. The District of Columbia, Puerto Rico, American Samoa, Guam, and the Virgin Islands are considered "states" for coding purposes. These codes are listed in the State Code Table in Volume V, Section 2.1.0.[3] Note: For state codes 01-09, be sure to include the zero.

County (Spaces 3-6). Enter the four-digit code for the county, census division (Alaska), air pollution control district (Massachusetts) or parish (Louisiana). The county identification codes are listed in Volume V, Section 2.2.0. Note that in Volume V, Section 2.2.0 asterisks distinguish counties or county equivalents from cities and towns. There are a few cities in the U.S. that are considered independent entities. In such cases, enter the City Code from Volume V, Section 2.2.0. Also, a complete listing of the independent cities which are treated as county equivalents is given in Volume V, Section 2.6.0.

Air Quality Control Region (AQCR) (Spaces 7-9). Enter the three-digit code number for the appropriate AQCR within which the county (or city) is located. These codes are provided in Volume V, Section 2.4.0. Be sure to enter all three digits, including zeros, as appropriate. For counties that are contained in more than one AQCR, only one NEDS record for area source data is maintained at present (i.e., only one area source form is completed for each county regardless of how many AQCR's it is in). To determine the proper AQCR code for these "split" counties, enter the code for the AQCR in which the majority of the population of the county is located.

Year of Record (Section 1, Spaces 10-11). Enter the last two digits of the calendar year that information on the Area Source Input Form represents. Do not enter the year that the area source form was coded. Space for this information is provided in the upper right-hand corner of the form.

Population Code (Section 3, Space 77). Enter a one-digit code from Volume V, Section 3.15.0, that corresponds to the percent of urban population for the county. The urban-rural population breakdown for determining this percentage is provided in the 1970 Census of Population.[5]

SIP Emission Estimates (Section 1, Spaces 12-34). These spaces are provided to record emission estimates, in hundreds of tons per year, for each of the five major pollutants (particulates, sulfur oxides, nitrogen dioxide, hydrocarbons, and carbon monoxide) from the state's implementation plan emission inventory. Five spaces are allotted for each pollutant except NO_x and SO_x, for which only four spaces are available. Be sure to complete all spaces, including leading zeros where necessary. Do not enter new, hand-calculated emission estimates in these spaces. They are provided only to maintain a record of the emission estimates for area sources originally made for state SIP's.

FUEL PARAMETERS

These data are required in order to calculate emissions of particulates and sulfur oxides from stationary source fuel use.

Sulfur Content (Section 1, Spaces 35-42). Enter the percent of sulfur content for each of the four types of fuels (anthracite coal, bituminous coal, distillate oil, and residual oil). The figures entered should be weighted averages for the fuels consumed by area sources. For example, if data for bituminous coal sulfur contents and fuel consumption totals by source category are available, weighted averages should be computed as follows:

Residential: 1000 tons, 1.4 percent sulfur
Commercial-Institutional: 500 tons, 1.6 percent sulfur
Industrial: 1500 tons, 2.0 percent sulfur

then the weighted average sulfur content is calculated as follows:

$$\begin{array}{rcl} 1000 \times 1.4 & = & 1400 \\ 500 \times 1.6 & = & 800 \\ \underline{1500} \times 2.0 & = & \underline{3000} \\ 3000 & & 5200 \end{array}$$

$$\text{Average sulfur content} = \frac{5200}{3000} = 1.73 \text{ percent}$$

Some areas have regulations limiting the sulfur content of fuels. If, for instance, no bituminous coal with a sulfur content of more than 1.5 percent can be burned in the area, and if it is known that no significant amount of coal with a sulfur content of less than 1.5 percent is burned, then the weighted average sulfur content for bituminous coal can be assumed to be 1.5 percent. Figures entered on the form must represent the fuel that is actually being used, not the fuel that is supposed to be used or that will be used at some time in the future.

To determine sulfur contents for fuel oil, it is recommended that the data from Bureau of Mines publications be used. These average sulfur contents should then be checked against the sulfur in fuel regulations in the various areas. Where the data are available, it is recommended that sulfur content information available from local agencies be considered in addition to the literature sources. Some agencies conduct fuel registration programs which may be a valuable source of data. Supplemented with information from local fuel dealers and suppliers, such data may provide a good indication of fuel sulfur contents appropriate for area source consumers. The following systematic procedure may he used:

1. Make a summary of sulfur content data for fuel oils by grades from the Bureau of Mines publication entitled Burner Fuel Oils.[6]
2. Calculate annual weighted averages of sulfur content for residual oil, based on the December issue of the Bureau of Mines publication entitled Fuel Oils by Sulfur Content.[7]
3. Summarize the sulfur in fuel regulations by state, and within the state by area if this is applicable.
4. Survey local and state air pollution agencies for actual sulfur in fuel oil data for the counties under their jurisdiction.
5. If adequate results are available from Step 4, use these.
6. Otherwise, use the results of Step 1 for the sulfur content of distillate oil.
7. Combine the information obtained for residual oil in Steps 1, 2, and 3 to decide on the most appropriate sulfur content to use for residual oil.

Data on sulfur in fuel oil from point sources should be used with caution for determination of area source sulfur contents. Large sources may blend different grades of oil in order to comply with sulfur oxide emission limitations. Such blends of fuel oil may not be typical of the fuel oil used by area sources.

Sulfur content of anthracite coal does not vary considerably, with values of 0.5 to 1.0 percent typical.[8,9] A value of 0.7 percent is usually assumed for area sources by NADB. For bituminous coal, data for coal used by point sources, literature data, local dealers, and sulfur-limitations regulations should be consulted to determine the appropriate values. To use literature data, consult Reference 10, which gives the origins of coal that is distributed to each state. From References 8, 9, and 11 or from other data, sulfur contents of coal from each district of origin can be estimated. The shipments data can then be used to determine weighted average sulfur contents for the coal consumed in each state. These averages may be assumed appropriate for area source bituminous coal use, if necessary. Due to the wide variation in sulfur contents of bituminous coal, such averages may still not be too accurate for counties or smaller areas. Therefore, data from local dealers and point sources should not be used if any other means to judge the correct sulfur contents are available.

Ash Content (Section 1, Spaces 43-48). Enter the weighted averages of ash content for anthracite coal and bituminous coal to the nearest tenth of one percent. Follow instructions for sulfur content to determine weighted averages. For anthracite coal ash contents of 10 to 16 are the usual range, with 11 percent being a typical value. To determine ash contents for bituminous coal, the same general procedures and references discussed for sulfur content determination may be used.

STATIONARY SOURCE FUEL CONSUMPTION

The quantity of various types of fuel consumed by each source category (residential, commercial-institutional, and industrial) will be entered in these fields. Collectively these three categories account for all stationary fuel combustion activity not usually reported as point sources.

To complete the area source form, the county fuel consumption totals must be assigned to the proper source categories. If fuel dealers furnish county totals by source category, no problems are involved; but if only county sales totals can be obtained from fuel dealers or if Bureau of Mines data must be used, then apportioning techniques are required.

SOURCE CATEGORIES

1. Residential Fuel (Section 1, Spaces 49-77). The residential category includes all residential dwellings in structures of fewer than 20 units. For a simple determination of residential fuel use, state totals for residential fuel use can be apportioned to counties by the number of dwelling units using each fuel per county. Dwelling unit information is available from the 1970 Census of Housing[12] and should be applied according to the following formula:

$$\text{County residential fuel total} = \text{State residential fuel total} \times \frac{\text{county dwelling units}}{\text{state dwelling units}}$$

The county and state dwelling units above refer to the number of dwelling units using each type of fuel for space heating.

2. Commercial-Institutional Fuel (Section 2, Spaces 10-35). Commercial-institutional establishments are defined by SIC groups 50-99,[13] including retail and wholesale stores, schools, hospitals,

government buildings, other public buildings, and apartment complexes with more than twenty units per structure. State fuel totals for this source category can best be apportioned to counties according to population, as given in the 1970 Census of Population.[5]

$$\text{County fuel total} = \text{State fuel total} \times \frac{\text{County population}}{\text{State population}}$$

3. Industrial Fuels (Section 2, Spaces 36-73). The industrial category (establishments defined by SIC groups 20-39) includes all manufacturing industries with emissions too small to qualify as point sources.

County industrial fuel totals are proportional to the total number of manufacturing employees per county, as given in the Census of Manufactures, "Area Statistics" (Ref. 14) or County Business Patterns (Ref. 15).

$$\text{County industrial fuel total} = \text{State industrial fuel total} \times \frac{\text{County manufacturing employees}}{\text{State manufacturing employees}}$$

DETERMINATION OF FUEL USE TOTALS

Before a specific methodology can be applied to calculate area source fuel use, the total fuel consumed in an area must be determined. Such data are usually obtained from either fuel dealers and distributors, published references, or government regulatory agencies. Some fuel retailers maintain sales records that can be a valuable source of information for the determination of total fuel consumption. The information needed from fuel dealers concerns their annual sales (preferably by county) to each source category. The area source totals of residential and commercial-institutional fuel consumption are then simply the fuel dealers' figures minus any fuel consumed by point sources included in these source categories. Because dealer sales to industrial users may not adequately represent the amount of fuel consumed by industrial sources, other methods are primarily used for industrial fuel determination. Any information gained from fuel dealers would be useful, however.

It is important that all fuel dealers be contacted. The accuracy of survey results will be significantly reduced if some fuel dealers are overlooked. It may be that not all fuel dealers will be able to furnish addquate information. In the past, natural gas dealers have been best able to furnish the required data. Other dealers either have been reluctant to release information, or simply have not had the detailed breakdowns required. There is no assurance that fuel dealer sales accurately represent fuel consumption, either. Sales of coal to industrial sources or of wood to residential sources, for instance, may represent only a part of the total fuel consumed, because much of the fuel consumed may not come from retail dealers. Other methods should be used for those cases in which fuel dealers cannot provide adequate data on total fuel sales. It should be emphasized, however, that information provided by dealers, although perhaps incomplete, can provide insights into fuel use patterns that would not be discovered by other methods.

Published references are the most common sources of fuel use data. Reports produced by the U. S. Bureau of Mines contain data on fuel sales and distribution. The advantages of the use of this information are that the data are reported nationwide, are readily available because they are published, and are updated every year. The drawback to the use of this material is that fuel data are reported by states only, and often are not broken down into the desired source categories. County totals must be estimated by apportioning state totals. This geographical apportioning step, which may also be necessary for data obtained from fuel dealers, can become quite complicated and involve a large number of calculations.

Finally, useful data may sometimes be obtained from Federal and state regulatory agencies. The Federal Power Commission compiles data on fuel used by electric utilities (Ref. 16), and also for natural gas company sales and pipeline distribution (Ref. 17). State utility commissions may be able to provide similar data. In addition, state revenue or tax departments may have data that would be helpful for determination of fuel usage.

APPORTIONING TECHNIQUES

If published references must be used, techniques for determination of source category totals and apportioning of these state or regional totals to counties is required. NADB uses the general techniques described below for each fuel. These methods, or variations of these methods, may be used for apportioning. The details of the NADB techniques are described in the NADB Internal Operations Manual.[2]

1. FUEL OIL

   Data collection for fuel oil consumption covers the use of both distillate and residual oil. Distillate oil includes fuel oil grades 1, 2, and 4. In addition, diesel fuel and kerosene can be considered distillate-type oils. Nationwide, residential, and commercial-institutional sources are the largest consumers of distillate oil. Residual oil includes fuel oil grades 5 and 6. In most areas residual oil is not used by residential sources, but significant amounts may be consumed by industrial and commercial-institutional users. Usually, literature data must be relied upon to determine total fuel oil consumption. Fuel dealers and government agencies have in the past usually been unable to supply adequate data on fuel oil use. The publication of the Bureau of Mines, Sales of Fuel Oil and Kerosene,[18] is the most acceptable reference. For selected years, data are also available from the Census of Manufacturers,[19] published by the Bureau of the Census. This publication is not produced annually, however, and is of limited use for most area source inventory purposes.

a. NADB Method. The general method used by NADB is as follows:

(1) Residential distillate oil consumption for each county is calculated as follows:

$$F = (0.092D + 217.2R - 568)\,S + 250W \tag{1}$$

where:

F = Residential fuel oil use (gallons/year)
D = Annual heating degree-days
R = Average rooms per housing unit
S = Number of housing units in structures of fewer than 20 units using oil for space heating

W = Number of housing units using oil for water heating.

Degree-days are defined as the difference between the mean daily temperature and 65°F. Annual heating degree-days may be obtained from the Local Climatological Data publications of the U. S. Department of Commerce.[20] The degree-days for a weather station in or as close as possible to the area of interest should be selected. The average rooms per housing unit and number of housing units using oil for space heating and water heating may be obtained from the Census of Housing.[12,21] These data are updated each year based on the number of new oil burners installed since the census year and the number of conversions to and from oil burners.[22] It is assumed that residential residual oil consumption is zero.

(2) State totals for commercial-institutional area source fuel oil use are determined by subtracting NEDS commercial-institutional point source fuel oil use from the appropriate heating oil totals given by the Bureau of Mines (Ref. 18). County totals for fuel oil use by various subcategories, such as hospitals, hotels, schools, colleges, and laundries, are calculated based on correlative relationships between fuel use and employment.[23] Fuel oil consumed by housing units in structures of 20 units or more in each county is determined by the use of equation (1) and the appropriate data from the Census of Housing. The six county subcategory totals are then subtracted from the state area source totals.

The remaining fuel oil totals are apportioned to counties by means of adjusted commercial employment data (employment totals for the various subcategories subtracted from the county commercial employment data in County Business Patterns).[15]

For each county then,

$$\text{Fuel oil consumed in county } i = \sum_{j=1}^{6} S_{ij} + \left(M_I - \sum_{j=1}^{6} \sum_{i=1}^{n} S_{ij} \right) \frac{E_i}{E_I} \qquad (2)$$

where:

S_{ij} = fuel oil consumption for the ith county for the jth subcategory

M_I = commercial-institutional area source fuel oil total determined from Bureau of Mines data for State I.

E_i = adjusted commercial employment for county i

E_I = adjusted commercial employment for state I

i = 1 to n for each of the n counties in a state

j = 1 to 6 for each of the 6 commercial-institutional subcategories

(3) State totals for industrial area source fuel oil use are determined by subtracting NEDS industrial point source fuel oil use from the appropriate totals given by the Bureau of Mines.[18] Industrial employment data by 2-digit SIC from County Business Patterns[15] is converted

to industrial area source employment by subtracting the employment accounted for by point source fuel consumers. The industrial area source employment is then adjusted by means of a fuel intensity factor for each 2-digit SIC.[23]

For each county then,

$$\text{Industrial fuel oil} = (M_I)\frac{\sum_{j=1}^{20} F_j E_j \text{ county } i}{\sum_{j=1}^{20} F_j E_j \text{ state I}} \qquad (3)$$

where:

M_I = industrial area source fuel oil total determined from Bureau of Mines data for state I.

F_j = fuel intensity factor for the jth industrial employment category

E_j = area source industrial employment for the jth industrial employment category

j = 1 to 20 for each of the 20 categories in 2-digit SIC employment groups 20-39.

From the results of the above methodology, county distillate and residual oil totals for each source category are coded into the NEDS area source format; residential distillate oil in spaces 60-64, section 1 residential residual oil (zero) in spaces 65-68, section 1, commercial-institutional distillate and residual-oil in spaces 20-24 and spaces 25-29, section 2, respectively, and industrial distillate and residual oil in spaces 52-56 and spaces 57-61, section 2, respectively. The above methods are computerized for NADB use. Due to the large number of calculations involved, it is not recommended that the above methodology be attempted by hand for any large scale effort. However, readers interested in more detailed discussion are referred to either the NADB Internal Operations Manual[2] or report EPA-450/3-74-021, Development of a Methodology to Allocate Liquid Fossil Fuel Consumption by County.[23]

b. Alternatives to NADB Method. The above methodology will provide reasonable estimates for fuel oil use, based on literature data. Therefore, it is suggested that better data can best be obtained by techniques that do not rely on literature data. The most obvious other source of data is local fuel oil distributions and dealers. In many cases, however, dealers have not been able to supply sales records for precise geographical areas for each consumer category. Any information gained from dealers would probably be useful, however.

An additional method would be to conduct an extensive survey of sources to determine fuel use. Coverage of all major consumer classes may be difficult, unless good records are available from local agency permit or registration systems. Other state/local agencies responsible for boiler registrations and inspections may be of assistance. As an alternative, a partial source survey, covering classes of sources thought to be major fuel users, may be desirable. For example, determination of fuel use by the commercial-institutional subcategories could probably be obtained through surveys of a relatively small number of sources. Obtaining fuel use for these source classes through a survey would provide much better data than through use of correlation equations which NADB relies upon.

Another approach is to use different correlation equations requiring more detailed source data to predict fuel use. For instance, to predict distillate oil used for space heating equations of the following types may be used:

$$\text{Oil consumed} = \frac{\text{No. of oil burners} \times \text{avg size (Btu/hr)} \times 8760\ \text{(hr/yr)} \times \text{load}}{140{,}000\ \text{Btu/gallon}}$$

or

$$\text{Oil consumed} = \frac{\text{No. of oil burners} \times \text{heat loss (Btu)} \times \text{degree-days} \times \text{use factor}}{140{,}000\ \text{Btu/gallon} \times \text{Design Range } (^\circ\text{F})}$$

where the heat loss is dependent on the average square feet of building space. The design range is defined as the difference between inside temperature and the design outside temperature for an area. Use of these relationships requires collection of substantially more source data and determination of proper load and use factors. Fuel oil trade association publications,[24] oil dealers, and utility companies may be able to provide useful information. Modifications of the above equations may provide relationships for predicting residential, commercial-institutional, or industrial space heating fuel oil use which can be summed to obtain grid, county, or state totals. It is suggested that the derived totals be adjusted to conform with the state totals given in literature references. This step in effect corrects for variations in the parameters used in the above equations.

2. COAL CONSUMPTION

It may be necessary to determine consumption of both anthracite and bituminous coal. Anthracite, or hard coal, is produced almost exclusively in Pennsylvania and is available in significant quantities only in states that are within easy shipping distance from Pennsylvania. Anthracite may be consumed by all source categories, although most is used by residential sources. Bituminous, or soft coal, is available in most areas of the country. Also included as bituminous coal are the lower grades of sub-bituminous coal and lignite. Bituminous coal is often favored for use by electric utilities, manufacturing industries, and coke producers. Bituminous coal is used in some areas for residential and commercial-institutional heating.

a. NADB Method. The same general techniques used for fuel oil may be adapted to determine coal consumption. In the method which is computerized for NADB use, residential coal use is calculated for each county based on the following equation:[25]

$$\text{Tons of coal per dwelling unit} = 0.003874\, e^{\left(7.6414 - \frac{1000.0}{\text{Degree-Days}}\right)} \quad (4)$$

The number of dwelling units using coal for space heating is obtained from reference 12 and is updated annually based on additional data from the Bureau of Mines[10] or the Bureau of the Census. Degree-days are obtained from reference 20. The coal use predicted by Equation (4) is distributed between anthracite and bituminous coal based on the estimated residential market share of each.[25] Use of coal for non-space heating purposes is ignored. Methods used for calculation of commercial-institutional and industrial coal use are virtually identical to those discussed for fuel oil. The fuel use totals are obtained from references 10 and 26, with the same general procedures used to calculate area source totals which are apportioned to counties.

b. Alternatives to NADB Method. Again, to improve on the data prepared by NADB for NEDS, it is suggested that the acquisition of non-published data is the best approach. Obtaining sales data from coal dealers and distributors, surveys of individual sources or source categories, use of source permit or registration systems, etc., are methods that may provide useful data. Since the emissions from coal-fired boilers vary a great deal from one type of boiler to another, source surveys or use of source registration data for coal users are particularly useful. By determining the types of boilers and furnaces in service plus the extent of controls applied, emissions from area source coal use can be hand calculated and entered into

NEDS using the procedure described under Hand-Calculated Emission Estimates later in this section. This procedure could provide more accurate emission estimates since the NADB computerized method uses only one emission factor (with no provision for controls) for each source category. The method assumes that all residential consumption is in hand-fired units, commercial-institutional consumption is all in spreader stokers for bituminous coal, and overfeed stokers for anthracite coal, and that industrial consumption is distributed the same as commercial-institutional but with a somewhat larger average boiler size. See AP-42[27] for a presentation of the emission factors for coal combustion.

3. NATURAL GAS AND LPG

a. NADB Method. In the method used by NADB for NEDS, natural gas and LPG (liquefied petroleum gas) are combined and reported in the same spaces (spaces 69-73, section 1, for residential, spaces 30-33, section 2 for commercial-institutional, and spaces 62-66, section 2 for industrial). LPG is converted to "equivalent natural gas" on the basis of equal resulting emissions (one gallon of LPG equals 100 cubic feet of "equivalent natural gas").[27]

Residential natural gas use by county is computed using the following equation:[25]

$$\text{Therms of natural gas consumed} = 47.5 \times A \times B^{0.367} \times \left(\frac{C}{D}\right)^{0.5888} \times E^{0.125} \quad (5)$$

Where:

A = total number of natural gas customers

B = annual heating degree-days

C = number of dwelling units using natural gas for space heating

D = the larger of the number of dwelling units using natural gas for cooking or hot water heating

E = median number of rooms per dwelling unit.

Item A is obtained from American Gas Association reports or from the Census of Housing.[12] Each parameter is obtained or updated annually. The resulting natural gas use in therms (one therm = 100,000 Btu) is converted to cubic feet on the basis of natural gas heating value (usually 1000 to 1050 Btu/cubic feet). Residential LPG use is computed by county using a simpler equation based only on number of dwelling units, heating degree-days, and regional-use factors for LPG consumed for cooking and water heating. There are some differences in the method for calculating commercial-institutional and industrial natural gas use which roughly account for the non-availability of natural gas in certain areas not served by natural gas pipelines, but it is basically the same as the method described for fuel oil. LPG use by the other source categories is computed in the same manner also.

b. Alternatives to NADB Method. To improve on the data in NEDS, natural gas companies are usually an excellent source of information. Also, reports submitted by these companies to the

Federal Power Commission (Ref. 17) or state utility commissions may be useful. Otherwise, the same methods suggested for improving fuel oil and coal data may also be of interest for determining natural gas and LPG use. Remember that the NEDS area source reports include LPG with natural gas use, and that if natural gas use is determined by a different method than used by NADB, the estimated LPG use should be included with the data entered on the NEDS coding forms.

4. OTHER FUELS

Other fuels which may appear as area source fuels are wood, coke, and process gas. Census of Housing[12] data are used to estimate residential consumption of wood according to the following equation:[30]

$$\text{Residential wood use (tons/yr)} = 0.0017 \times \text{No. of housing units heating with wood} \times \text{degree-days} \times \frac{\text{average rooms per housing unit}}{5.0 \text{ rooms}}$$

No other estimates of consumption of miscellaneous fuels are made by NADB. All other miscellaneous fuel fields (commercial-institutional wood, spaces 34-35, section 2; industrial coke, spaces 48-51, section 2; industrial wood, spaces 67-69, section 2; and industrial process gas, spaces 70-73, section 2) are assumed to be zero or negligible. Thus, if the state or local agency has data which indicate that any of these fuels are in fact consumed by area sources, the NEDS data may be improved by coding this data. The most common users of wood as fuel (other than residential consumers) are those wood processing industries that burn wood waste. Process gas use is most common for petroleum refineries, certain chemical processing industries, and iron and steel mills. Coke is consumed mainly by the metals industries, primarily iron and steel mills and foundries. Normally all such fuel use for an area will be included as point source data in NEDS.

SOLID WASTE DISPOSAL OPERATIONS

Introduction. The area source solid waste category includes on-site refuse disposal activities by residential, industrial, and commercial-institutional sources. On-site incineration refers to disposal in a small incinerator. This includes back yard burners, industrial incinerators, and incinerators at food and department stores, hospitals, and schools. On-site open burning refers to unconfined burning of waste such as leaves, landscape refuse, or other rubbish. Large open-burning dumps and municipal incinerators are usually classed as point sources. For emission inventory purposes, only solid waste that is burned is of interest. Unfortunately, very little quantitative information about on-site solid waste disposal is available.

Some areas have conducted comprehensive surveys of solid waste disposal practices. If such a survey is available, it should be used to estimate solid waste quantities. Many such surveys cover only collected waste, however, and are of limited value for determination of on-site waste disposal quantities. In the event that data from a solid waste survey are not available, solid waste quantities are usually estimated by per capita generation factors. Nationwide, it is estimated that about 10 pounds of solid waste is generated per capita per day.[27] By judging the proportion of the waste disposed of by various methods, estimates of waste quantities for on-site incineration and open burning can be made. In addition, several surveys of nationwide solid waste disposal practices have provided data useful for estimation of area source solid waste quantities.[31,32] It should be noted that data based on nationwide or regional averages may be extremely inaccurate predictors of solid waste quantities for local areas. Due to the tremendous variation in solid waste disposal practices from one community to another, the use of nationwide averages to predict local solid waste quantities should be considered rough estimates at best.

Furthermore, local regulations governing solid waste disposal should be taken into account. In some areas, open burning and on-site incineration are regulated and may be prohibited. If one or both of these practices is prohibited, the corresponding generation factor(s) should not be applied. Under such circumstances assume that the solid waste that would normally be allotted to on-site disposal is handled by some other method, such as land-filling, which would not result in air pollutant emissions.

On-Site Incineration (Spaces 10-24, Section 3). If no better data are available from solid waste surveys, state and local agencies or other reliable sources, NADB has used the factors given in Volume V, Section 3.13.0, to estimate on-site incineration of solid waste. Factors have been derived for each EPA region. Estimates may be made for on-site incineration by residential, commercial-institutional, and industrial sources. Care should be taken in the application of these factors. If a number of on-site incinerators have been identified as point sources, it may be appropriate to reduce or eliminate the area source estimates. If data are available from registration or permit files for solid waste disposal equipment, these data may provide more accurate estimation of on-site incineration quantities than would application of the factors presented in Volume V, Section 3.13.0. Reference 33 presents additional data on the number of incinerators, size of units, and incinerator air pollution control equipment which may be useful in making more detailed estimates for on-site incineration.

Open Burning (Spaces 25-41, Section 3). Virtually no data have been available to NADB to estimate open burning. The extent of open burning can best be estimated by contacting the most knowledgeable local officials and taking into account the effects of local air pollution regulations restricting or prohibiting open burning. If no reliable estimates can be made, the factors given in Volume V, Section 3.13.0, may be used to produce the data in NEDS.

MOBILE SOURCE FUEL USE

Mobile source fuel use includes highway use (automobiles, trucks, buses, etc.) and non-highway fuel use (railroads, vessels, aircraft, miscellaneous off-highway vehicles). Since these sources usually account for the majority of the emissions of carbon monoxide, hydrocarbons, and nitrogen oxides in an area, it is vital to obtain accurate estimates of mobile source activity. Such estimates usually involve the determination of fuel used by mobile sources. However, collection of other data, such as measured vehicle-miles for motor vehicles and land-takeoff (LTO) cycles for aircraft, is usually of primary importance since emission factors for these categories are expressed in weight of pollutants per mile travelled or LTO cycle.[27] The purpose of collecting fuel use data for motor vehicles is to estimate vehicle-miles when they are not directly available.

HIGHWAY MOTOR VEHICLES

For NEDS, emissions for four of the six highway vehicle categories are calculated. These are:

L. Light-duty vehicles (LDV) - Include gasoline powered passenger vehicles weighing 8500 pounds or less.
2. Light-duty trucks (LDT) - Include gasoline powered cargo vehicles weighing 8500 pounds or less.
3. Heavy-duty gasoline (HDG) vehicles - Include gasoline powered trucks and buses weighing more than 8500 pounds.
4. Heavy-duty diesel (HDD) vehicles - Include diesel powered trucks and buses.

The two other motor vehicle categories, light-duty diesel vehicles and motorcycles, are ignored in the current calculation procedure due to their negligible emissions at present.

Fuels consumed by highway vehicles include gasoline, diesel fuel, and LPG. Except for extremely detailed inventories, LPG use and LDV diesel use can be neglected. If at all possible, total measured vehicle-miles of travel (VMT) should be obtained. Total VMT can be obtained from traffic surveys conducted by state highway departments or local transportation agencies. Usually the total VMT will include diesel VMT as well as gasoline VMT. If actual vehicle-mile information is unavailable from these surveys, VMT can be estimated from traffic counts or traffic flow maps. This is accomplished by multiplying the traffic volume by the length of roadway. Since vehicle emission rates of CO, HC, and

NO_x vary appreciably with average speed, VMT data should be obtained by roadway type. On the basis of average speed, roadway types can be classified as: limited access (greater than 50 mph), rural roads (45 mph), suburban roads (35 mph), and urban streets (25 mph or less).

If measured VMT are not available, VMT must be calculated on the basis of estimated fuel use. Such a technique will significantly reduce the accuracy of the VMT estimates. Previous efforts have failed to produce any simple relationship between VMT for a county and standard demographic and economic data.[23] Actual VMT are the product of driving patterns which are a function of the geographical characteristics of the area, proximity to large population centers, employment centers or tourist attractions, characteristics of the transportation system (whether an interstate highway is present, whether mass transit systems exist, etc.), and other factors that are not easily quantified. If no measured VMT are available, however, and the purpose of the area source inventory does not justify the expense and manpower efforts required to collect measured VMT, alternate methods based on estimation of fuel consumption by vehicle category must be used.

1. NADB Method. For about 20 states, measured VMT data have been available to NADB and have been coded in spaces 53-77, section 4. When only total VMT, not broken down by road category, have been available, urban and rural fractions have been estimated based on the population distribution code (space 77, section 3). For instance, if the population distribution code is 6, indicating that 60-70 percent of the population of the county is urban, it is assumed the 60 percent of the VMT in the county are at speeds typical of urban roads. When only VMT for a year

somewhat older than the NEDS year of record are available, the VMT have been updated (updated estimates made only for VMT not more than 3 years older than NEDS year of record) based on total VMT reported for the state and latest estimates of county population.[34]

When no VMT data are available, emission estimates for motor vehicles are based on the reported fuel consumption (light gasoline, spaces 42-48, section 3; heavy gasoline, spaces 49-54, section 3; and heavy-duty diesel, spaces 61-66, section 3). These data are determined using the following method derived from reference 24, which has been computerized for NADB use:

a. State Gasoline and Diesel - HDV

Four heavy-duty vehicle (HDV) truck categories are defined:

HDV_1: 6,001 - 10,000 lb
HDV_2: 10,001 - 20,000 lb
HDV_3: 20,001 - 26,000 lb
HDV_4: Greater than 26,000 lb

In order to obtain the total motor fuel consumed by all HDV categories in each state, the following calculation is performed:

$$\text{Motor fuel for HDV} = \sum_{i=1}^{i=4} (\text{HDV}_i \times \text{average miles}_i/\text{miles per gallon}_i) + \text{commercial buses} \times 7276 \text{ gallons per bus} + \text{school buses} \times 1058 \text{ gallons per bus}$$

The breakdown of trucks into the four weight categories is available from the Census of Transportation,[35] (published every 5 years), or from R. L. Polk in Detroit, Michigan.

Average miles traveled by weight category are taken from the Census of Transportation and are held constant over the 5 years following that Census. Upon publication of the new Census of Transportation, these averages must be updated.

Miles-per-gallon figures by weight category were derived from Road User and Property Taxes,[36] a triannual publication of the Federal Highway Administration.

The most recent averages for each HDV category are:

HDV_1 = 11.2 miles/gallon
HDV_2 = 8.5 miles/gallon
HDV_3 = 7.2 miles/gallon
HDV_4 = 5.5 miles/gallon

Data on buses are obtained from both the Federal Highway Administration [37] and the Automobile Manufacturers Association.[38]

Once total motor fuel consumed by HDV's has been calculated for each state, gasoline usage by HDV's is obtained by subtracting total diesel and butane use from the motor fuel figures for each state. Diesel totals for HDV's are estimated annually by the Federal Highway Administration.[39]

b. County Gasoline and Diesel - HDV

County use of diesel by HDV's is obtained by using county truck registrations (Ref. 40) as the apportioning factors to be applied to total diesel used by HDV's in the respective state.

$$\text{Diesel HDV}_{\text{county } i} = \frac{\text{trucks} > 6000 \text{ lb}_i}{\text{trucks} > 6000 \text{ lb}_I} \times \text{diesel HDV}_{\text{state } I}$$

In order to calculate the county use of gasoline for HDV's, the county-by-county R. L. Polk truck registrations by weight categories are used. If these data are not available, county registrations of trucks by weight categories are estimated by assuming that the proportion of registrations in each category is the same for all counties within a state. The remaining calculation is similar to that used to obtain the state totals for this category:

$$(\text{gasoline HDV})_{\text{county } i} = \sum_{j=1}^{4} \text{HDV}_j \times \text{avg miles}_{j(I)}/\text{MPG}_{j(I)}$$

$$+ \frac{\text{population (census yr)}_i}{\text{population (census yr)}_I} \times \text{commercial buses} \times 7276 \text{ gal/bus}$$

$$+ \frac{\text{population (census yr)}_i}{\text{population (census yr)}_I} \times \text{institutional buses} \times 1058 \text{ gal/bus}$$

$$- \text{diesel HDV}_{\text{county } i}$$

c. State Gasoline - LDV

State LDV gasoline use = Total gasoline sales for highway use minus HDV gasoline use.

d. County Gasoline - LDV

The method developed for county allocation of gasoline used by LDV's is as follows:

(1) If vehicle miles are available by county, they are to be used as the distributive factor in the form:

$$\text{gasoline LDV}_{\text{county } i} = \frac{\text{vehicle miles}_i}{\text{vehicle miles}_I} \times \text{total gasoline state } I - \text{gasoline HDV}_i$$

(2) If vehicle mile data by county are not available, the sum of the registered automobiles and trucks under 6,000 lbs. in each county is adjusted by means of a rural/urban miles per vehicle index and used as the distributive factor in the form:

$$\underset{\text{county } i}{\text{gasoline LDV}} = \frac{\text{LDV}_i \times \text{index}_i}{\sum_{i=1}^{i=n} (\text{LDV}_i \times \text{index}_i)} \times \text{total gasoline}_{\text{state } I} - \text{gasoline HDV}_i$$

where: state I consists of n counties.

The appropriate miles per vehicle indices are as follows:

Population % Rural	Index
0-25	67
26-50	87
51-75	103
76-100	115

Using the above indices to adjust county LDV registrations roughly accounts for vehicles in rural areas traveling a higher number of miles per vehicle than vehicles in urban areas. These indices represent the averages for selected states where measured VMT are available. Since driving patterns may vary considerably from one state to another, the indices may not provide accurate results for some states.

Finally, emissions are computed for highway vehicles using the appropriate emission factors. Since only two gasoline vehicle categories are considered in the previous calculation procedure, vehicle less than 6000 pounds and vehicles over 6000 pounds, the data are split into three fractions to properly calculate emissions for LDV, LDT, and HDG. Presently, a national average fraction is used to make this split as follows:

Gasoline used by LDV = 0.878 x light vehicle gasoline (spaces 42-48)
Gasoline used by LDT = 0.122 x light vehicle gasoline (spaces 42-48)
+ 0.273 x heavy vehicle gasoline (spaces 49-54)
Gasoline used by HDG = 0.727 x heavy vehicle gasoline (spaces 49-54)
Diesel used by HDD = heavy vehicle diesel (spaces 61-66)

These fuel consumption figures are then converted to VMT using the following factors:

LDV - 13.5 mpg
LDT - 11.8 mpg
HDG - 7.3 mpg
HDD - 5.2 mpg

If measured VMT are not available, these computer calculated VMT are used to calculate emissions. If measured VMT are available, these data are used for emission calculations with the split among vehicle classes determined according to the ratio of VMT calculated from fuel use for a particular vehicle class to the total VMT calculated from fuel use for all categories. Emission factors for the VMT reported for each vehicle class for each road category are then applied to compute the emissions.

For each county, the NEDS area source emission factor file includes county-specific emission factors that take into account whether the county is high or low altitude, California or non-California, and vehicle mix by model year, according to R.L. Polk vehicle registration data. County-specific emission factors for each vehicle class (LDV, LDT, HDD, HDG) for each pollutant are used. Speed corrections are taken into account in the computation of emissions for each road category. Speeds assumed for each road class are:

Limited access roads: 50 mph
Rural roads: 45 mph
Suburban roads: 35 mph
Urban roads: 19.6 mph

Measured VMT that are entered for any of the above road categories are assumed to represent the speed distribution for the county. If no measured VMT are entered, the calculated VMT are broken into urban and rural fractions (45 mph and 19.6 mph) on the basis of the population distribution code (space 77, section 3).

2. Alternative to NADB Method. Numerous improvements can be made to the data prepared by NADB for NEDS, particularly for the areas where measured VMT were not available. By far the most significant improvement that could be made is to collect measured VMT data or obtain measured VMT by road class where only total VMT are available. If limited agency resources rule out such a large data collection effort, improvements in the data can be made by securing local fuel sales data for mobile sources, thereby eliminating the need for the county apportioning technique used by NADB. Gasoline and diesel fuel sales data by

county are sometimes available from state tax departments. If such data are used, care should be taken to determine that the data apply only to road use of fuels and that off-highway fuel use is not included as well. Some off-highway fuel use is very likely to be included in data for total fuel use, and if the portion of off-highway fuel use is considered to be a significant portion, it may be necessary to correct the data to account for this.

One of the chief weaknesses of the apportioning method used by NADB is that it does not adequately account for fuel used by interstate trucking. Since county HDV fuel use is based on county truck registrations,[5] fuel use by through trucks is not necessarily assigned to the proper location. To account for this deficiency it may be possible to estimate VMT by use of any special transportation studies available. Also, knowledge of the primary truck routes may enable estimates of local VMT. A considerable portion of heavy-duty truck traffic is on interstate highways. Estimates of truck traffic volume on these routes or other primary truck routes should facilitate much better estimates of fuel consumption in a county by heavy trucks. Likewise, special transportation studies may provide better estimates of LDV travel. At the least, it may be possible to obtain estimates of total traffic volume from transportation planners or special studies; these could then be used to estimate VMT for a county. Any such estimates of VMT must not be entered in spaces 53-77 of section 4. These spaces are for measured VMT only. Other estimated VMT should be converted to equivalent fuel consumption date which can be coded into NEDS.

If users wish to perform a more detailed emission calculation procedure, (i.e., better calculation of LDV, LDT, and HDG fuel use fractions, or inclusion of hot/cold start on ambient temperature correction factors) such calculations may be done by hand or by an external computer program, and the results entered in the hand-calculated emission estimates section on NEDS area source card 7.

RAILROAD FUEL USE

This category, which is concerned with fuel consumption by railroad locomotives, also includes the fuel used to heat railroad stations and workshops. The latter fuel use will be much less than that of locomotives and is difficult to separate from the total railroad fuel use. Hence, the railroad category is considered to be the fuel consumption by locomotives, although it does include small amounts of fuel used for space heating. The primary fuel consumed by railroads is distillate oil (diesel fuel), but smaller amounts of residual oil and coal are also used. The county fuel consumption by railroads, in thousands of gallons, will be entered in Section 3, spaces 72-76.

1. Collection Methods.
   a. Contact rail lines: Rail lines may be able to furnish state totals for their fuel use, but it is unlikely that they will be able to provide information by county.

   b. Bureau of Mines data: Sales of fuel oil to the railroads for use in each state are given in Table 10 of Mineral Industry Surveys.[18]

2. Apportioning to Counties. State fuel totals can be apportioned to counties as follows:

   a. By miles of track per county as determined from detailed state maps or obtained from the rail lines.

   b. By county population as given in the 1970 Census of Population.[5] If county fuel totals are obtained from rail lines, this information should be used. In most cases, it will be necessary to apportion a state total, however. Rail line figures should be used in preference to Bureau of Mines state totals, because some preliminary apportioning may be accomplished by doing so. Fuel use by a rail line can be assigned to only that portion of the state in which the rail lines operate.

Apportionment by miles of track per county is the preferred method; however, track miles in railroad yards often cannot be determined if state maps must be used to estimate track mileage. Because operations in rail yards are usually heavier than on main-line track, emissions from yard operations may be quite significant. If yard track mileage cannot be obtained from rail lines, it can be roughly accounted for by doubling the measured track mileage in counties where it is known that there are significant yard operations. The population apportioning technique should be used only when it is impossible to use track mileage. This technique assumes that most yard operations take place in large cities, an assumption that may or may not be true depending on the state being considered.

Residual oil, which may be used by railroads, can be accounted for if Bureau of Mines figures are used by adding the state residual oil total for railroads to the distillate oil total before apportioning to counties. Use of coal by railroads, which can be considered negligible, does not need to be reported.

3. NADB Method and Alternatives. For NEDS, NADB has simply apportioned state totals for railroad fuel use to counties on the basis of population, omitting entries for those counties where maps indicate that there are no rail lines. Generally, because emissions from railroads are not significant compared to other sources, this rough method has been deemed adequate. Detailed calculations for estimation of railroad fuel use are possible, but can easily become very complicated and time-consuming. Factors such as railroad traffic density, engine idling times, and rail grade (function of topography) should be taken into account. Reference 42 describes a more detailed method for estimating railroad fuel consumption.

AIRCRAFT LANDINGS AND TAKEOFFS

All aircraft operations are considered area sources. The number of landing and take-off cycles (LTO) performed annually by military aircraft will be entered in Section 4, spaces 10-13; civil (general aviation) LTO's will be entered in Section 4, spaces 14-19, and commercial LTO's in Section 4, spaces 20-24. Data for determining the number of LTO's in a county may be obtained from FAA publications or through contact with local airports.

1. FAA Published Data. Three Federal Aviation Administration publications can be used to determine LTO cycles performed in each county.

   a. FAA Air Traffic Activity:[43] This publication gives the number of operations performed by commercial, civil, and military aircraft at airports with FAA-regulated control towers. These airports will include all the major non-military airfields in the United States. An "operation," as defined by the FAA, is either a takeoff or a landing; thus, to determine the number of LTO's, the number of "operations" must be divided by two. Totals are given both for itinerant flights, those that terminate at an airport different from the one at which they originated, and for local flights, those that originate and terminate at the same airport. To determine total LTO's for each aircraft category the sum of itinerant and local operations should be used.

b. Military Air Traffic Activity Report:[44] This publication gives the number of operations by military and civil aircraft performed at military airfields. Follow the same procedure as given for FAA Air Traffic Activity[43] to determine LTO's.

c. Census of U.S. Civil Aircraft:[45] This publication can be used to obtain rough estimates of the number of LTO's performed by civil aircraft at airports that do not have FAA-related control towers. These airports include the smaller public airports and privately owned airstrips. The Census of U. S. Civil Aircraft gives the number of active civil aircraft in each county. These data can be used to estimate LTO's by assuming that the total number of eligible aircraft in each county is approximately equal to the number of daily LTO cycles performed by civil aircraft. This method should be used to estimate LTO's only for airfields not included in FAA Air Traffic Activity.

2. Local Contacts. The airport owners or operators can be contacted to determine the number of LTO's performed by civil aircraft at airports that do not have FAA-regulated control towers. Airport authorities can also furnish the number of LTO's for any commercial aircraft that land at the airport.

3. NADB Method and Alternatives. The data coded in NEDS by NADB are based almost entirely on the data available from published references. To improve on these data it is suggested that LTO's by aircraft type (jumbo jet, turboprop, military transport, etc.) be collected and the emissions computed based on the emission factors in AP-42.[27] The hand-calculated emissions can be entered into NEDS using the procedure described later in this section. The NADB method used only one set of emission factors typical of each aviation category. The aircraft mix at each location is not considered by this method.

VESSELS

This source category includes ocean-going ships, vessels, and small pleasure craft used on lakes and rivers. The data prepared by NADB have been based on the following methods, but no surveys of shipping operations have been made. It is suggested that this approach be used to improve the data.

1. Coal-Powered Vessels (Section 4, spaces 25-28). Enter the amount of coal consumed by vessels, notably in the Great Lakes region, that burn coal. Information on local fuel consumption can be obtained only from estimates made by port authorities or ship operators. If only state or regional totals are available, coal

use should be assigned to counties with major ports according to tonnage handled in the ports. These data are available from Waterborne Commerce of the United States,[46] published by the U.S. Army Corps of Engineers for all ports, and from World Almanac[47] for major ports only. If fuel use is available only as a total for multi-state area, assign fuel use to individual ports as a proportion of the total tonnage handled by all major ports included in the multi-state area.

2. Gasoline-Powered Vessels (Section 4, spaces 38-41). This category includes small pleasure craft operated on lakes, rivers, and coastal areas. Most of these craft are powered by outboard motors, but inboards and inboard-outdrives using gasoline are also included.

   a. NADB Method. NADB estimates gasoline use for states as follows:

Inboard gasoline Consumption (gal/yr) = No. registered inboards x 3 gal/hr x 100 hr/yr

Outboard gasoline Consumption (gas/yr) = No. registered outboards x 1.5 gal/hr x 100 hr/yr

State boat registrations are obtained from a boating industry publication,[48] but should also be available from the state agency responsible for boat registrations. Vessels powered by inboard-outdrives are included with inboards to estimate fuel use. The fuel use factors are derived from Reference 49.

The factor C is a climatic factor which accounts for a longer pleasure boating season in warmer areas. C is the number of months during which the monthly mean temperature exceeds 45°F for counties north of 43° latitude, 48°F for counties between 37° latitude and 43° latitude, and 55°F for counties south of 37° latitude.[20]

After state totals have been obtained, they are apportioned to counties by county inland water surface area[50] modified to include a surface area for coastal regions where necessary.

b. Alternatives to NADB Method. Apportioning to counties is the chief area in which the standard NEDS method could be improved by local input. Using knowledge of where boating activity actually takes place will provide more accurate county totals than apportioning to counties only on the basis of water area. Boat registrations by county, if available, may be useful, but boats are not necessarily used in the county they are registered in. Reference 50 is deficient also in that any man-made reservoirs constructed since 1960 are not included. The NADB method of accounting for vessel use in coastal areas is also rather poor and could be improved upon through local knowledge of boating locations.

c. Fuel Oil- and Diesel-Powered Vessels (Section 4, spaces 29-37).

(1). General Discussion. Enter the total diesel oil used by vessels in spaces 29-32 and the residual oil in spaces 33-37. The figures entered on the form should be the sum of dockside and underway fuel consumption totals. This category includes large cargo and passenger ships, oil tankers, tugboats, and all other steamships and motorships that use fuel oil. Fuel consumption totals can be obtained by:

(a). Questionnaire surveys of shipping and tugboat companies and contact with the local port authorities. Since many vessels move in and out of the port area during the year and are difficult to contact, such a survey is not often comprehensive enough to include all vessels.

(b). Use of vessel movement data supplied by the U.S. Army Corps of Engineers,[46] together with fuel consumption factors and Bureau of Mines fuel consumption figures.[18]

(c). Use of Bureau of Mines figures only. State totals for fuel oil sold to vessels are given in Table 11 of Reference 18. Not all the fuel sold for vessel use is consumed within the state boundaries, however. Much of the fuel may be consumed far out at sea and not in a port or waterway area. If it is assumed that 75 percent of the distillate oil figure given in Reference 18 and 25 percent of the residual oil total are consumed in ports and waterways within the state, a rough estimate of vessel fuel oil consumption can be obtained.

If fuel consumption totals are determined from a questionnaire survey, the fuel oil consumption figures should simply be assigned to the counties where the vessels are operated. If vessel movement data obtained from Reference 46 must be used, extensive apportioning techniques are necessary and both underway and dockside emissions should be considered. Underway emissions include the emissions that occur when a vessel is moving under its own power through a waterway and those that occur when it is maneuvering into its dock space. The average fuel consumption rate during these periods for steamships (predominantly residual oil users) is 44 gallons per nautical mile, and for motorships (predominantly diesel fuel consumers) the average fuel consumption rate is 19 gallons per nautical mile.[27]

In-port, dockside emissions occur when a ship operates its engines or boilers when in port to provide power for the ship's utilities. Average fuel consumption rates are 1900 gallons per day of residual oil for steamships and 660 gallons per day for motorships.[27] The local port authority should be able to supply a figure for the number of days, on the average, that a ship remains in port. If not, an average figure of 3 days per vessel should be used.

(2). NADB Method. Procedures for determining fuel consumption using the vessel-movement data method are as follows:

(a) Determine in-port consumption. Using Section 2 of Waterborne Commerce of the United States,[46] select the entries for ports, and assume that only self-propelled vessels with a draft greater than 18 feet will be operating under their own power when in port. Determine the number of vessels meeting these conditions that enter each port, and multiply by 3 days per vessel or by a number recommended by the port authority to calculate the number of vessel-days in each port. Vessel-days in port must be distributed between those ships that use residual oil and those that use distillate (diesel) oil. The procedure is illustrated as follows for State X:

i. From Reference 18, Table 11, the amounts of distillate and residual fuel oils sold for use by vessels in each state can be found for State X.

Distillate oil consumption = 232 x 103 bbl = 9,750 x 103 gal

Residual oil consumption = 1,000 x 103 bbl = 42,000 x 103 gal

ii. Convert fuel consumption figures to vessel-days:

$$\text{Distillate vessel-days} = \frac{9{,}750 \times 103 \text{ gal}}{660 \text{ gal/day}} = 14{,}800 \text{ vessel-days}$$

$$\text{Residual vessel-days} = \frac{42{,}000 \times 10^3 \text{ gal}}{1{,}900 \text{ gal/day}} = 22{,}100 \text{ vessel-days}$$

iii. Then total vessel-days = 14,800 + 22,100 = 36,900

$$\text{Percent distillate vessel-days} = \frac{14{,}800}{36{,}900} \times 100\% = 40$$

iv. Then at each port in State X, assign 40 percent of the total vessel-days to motorships (diesel fuel users) and 60 percent to steamships (residual fuel users). Finally in-port fuel consumption can be calculated by multiplying the distillate oil vessel-days at each port by 660 gallons per day and residual oil vessel-days at each port by 1000 gallons per day.

(b) Determine fuel consumption for vessels underway. Underway emissions will be calculated for diesel fuel use only. In a typical harbor, there are tugboats and small craft (draft less than 18 feet) operating which use diesel fuel. Most of the emissions from these vessels occur when the ship is underway, as most of them do not operate their boilers or engines when in port. Vessels using residual oil also have underway emissions, which are approximately accounted for when emissions for vessels using diesel fuel are calculated by the technique described below.

i. Subtract the sum for all ports of the in-port diesel fuel consumption from the state total for distillate oil consumption by vessels, as given in Reference 18, Table 11.

ii. Distribute the remaining fuel consumption figures to ports and waterways according to tonnage handled, as given in Section 1 of Reference 46. Underway fuel consumption totals are assigned to counties using the description of the waterway given in Waterborne Commerce of the U.S. In cases where a waterway borders more than one political jurisdiction, divide the emissions equally between jurisdictions. Where a waterway, such as a river, passes by a series of counties, assign the emissions to counties according to shoreline mileage along the waterway.

OTHER OFF-HIGHWAY FUEL USE

General Discussion. Off-highway internal combustion machines use both gasoline and diesel fuel. Off-highway gasoline-powered machines consist of farm tractors, lawnmowers, snowmobiles, etc. Off-highway diesel-powered machines include farm tractors, construction equipment, emergency generator power units, compressor engines, etc. All off-highway equipment is uncontrolled from an exhaust emission standpoint.

A simple way to estimate off-highway fuel consumption is to use literature data. Reference 37 gives estimates of off-highway gasoline use for states, and Reference 18 gives estimates of off-highway diesel use for states. The gasoline totals may be apportioned to counties according to some apportioning factor appropriate for each use category, but since no breakdown by type of use is given for diesel fuel, it is difficult to choose a meaningful apportioning factor, except perhaps to assume that off-highway diesel use is distributed similarly to off-highway gasoline use.

It is believed that literature totals probably underestimate the actual off-highway consumption. The literature data are based primarily on analyses of reported exemptions from state highway fuel taxes. Because of possible incomplete reporting on exempted fuel uses and differing definitions from state to state on which fuel uses are exempt from state taxation, many of the literature data are based on estimates rather than reported data known to give a complete record of off-highway fuel use. Thus, for NEDS coding, NADB suggests that literature data be used only for a first approximation of off-highway fuel use.

NADB Method. For reporting data into NEDS, NADB has the following method, which is based on data obtained from Reference 49. This method should give a fairly good indication of off-highway fuel use distribution between counties in a state. However, since the data are derived from national average data in many cases, the estimated total for off-highway fuel use may still be in error. If reliable local data are available which provide an accurate estimate of off-highway fuel use, the NEDS data can be improved by adjusting the county totals obtained using the NADB method so that their sum equals a more accurately known state total. The data could also be improved by obtaining use factors from knowledgeable local authorities which may be more appropriate than those used by NADB in the methods described below.

For NEDS reporting, NADB estimates off-highway consumption of gasoline and diesel fuel by calculating subtotals for each of the following categories. These subtotals are summed and entered in NEDS (gasoline in spaces 55-60 and diesel in spaces 67-71 of Section 3). The calculations are computerized for NADB use. The complete procedures for each category are outlined in Reference 2 and Reference 25.

1. Motorcycles: Gasoline use is estimated by assuming that, on the average, motorcycles achieve 42.5 miles per gallon and travel a certain distance off-highway each year. Annual off-highway travel mileages for each state are based on data from Reference 64. County consumption is derived as follows:

$$\begin{aligned}\text{county consumption (gal/yr)} &= \text{state registrations} \times \frac{\text{county population}}{\text{state population}} \\ &\times \frac{\text{average miles/yr}}{\text{42.5 miles/gallon}}\end{aligned}$$

   State motorcycle registrations are obtained from Reference 37.

2. Farm equipment: Both gasoline and diesel fuel may be consumed by farm machinery. Farm tractors account for the major portion, but significant amounts of fuel may also be consumed by combines, balers, harvesters, and general utility engines used for irrigation and

miscellaneous uses. State consumption of gasoline and diesel fuel for each category is determined as follows:

Consumption (gal/yr) = equipment population x usage (hr/yr) x fuel rate (gal/hr)

Equipment populations and use factors are obtained from the Census of Agriculture[51] or derived from data in Reference 49. County consumption of each fuel is determined by apportioning the state total for all farm equipment to counties according to number of farm tractors in each county.[51]

3. Construction equipment: County gasoline and diesel fuel use are determined as follows:

$$\text{County consumption} = \text{national fuel use} \times \frac{\text{state employment for SIC 16}}{\text{national employment for SIC 16}} \times \frac{\text{county population}}{\text{state population}}$$

National use of gasoline and diesel fuel has been derived from data given in Reference 49. Employment data are obtained from Reference 15 and population data from Reference 5.

4. Industrial equipment: County gasoline and diesel fuel used by industrial equipment (forklifts, generators, pumps, miscellaneous machinery) are computed as follows:

$$\text{County consumption} = \text{national fuel use} \times \frac{\text{county employment for SIC's 10-14, 20-39, 50, 51}}{\text{national employment for SIC's 10-14, 20-39, 50, 51}}$$

National fuel use has been estimated from Reference 49. Employment data are obtained from Reference 15.

5. Lawn and garden equipment: Gasoline use by lawn and garden tractors, including uses as mowers, tillers, and snowthrowers, is calculated for each county based on the estimate of national fuel derived from Reference 49. The national fuel use is apportioned to counties on the basis of number of single unit dwellings,[12] number of days per year for which the minimum temperature is greater than 32°F,[20] and county snowfall.[20] Number of single-unit housing structures is the primary apportioning factor, and the latter items adjust for the extent of summer vs. winter-related uses.

6. Snowmobiles: The estimated national gasoline use by snowmobiles[49] is apportioned to states according to snowmobile registrations. The state totals are distributed to counties based on population and amount of snowfall.

EVAPORATIVE LOSSES

General Discussion. This source category covers evaporative losses of hydrocarbons and other organic compounds at locations not considered as point sources. There are four main subcategories:

1. Gasoline-handling losses: Gasoline-handling losses include evaporative losses from gasoline marketing operations, i.e., filling losses from loading underground storage tanks at service stations, and spillage and filling losses from filling automobile gas tanks. Gasoline evaporative losses at a refinery or bulk distribution terminals can also be considered here if the installation is smaller than a point source in size.

   The best approach for collecting product distribution data is to develop an overall flow chart depicting gasoline flow within the geographical area in question, from its point of entry, through bulk storage, to service stations and vehicle-loading operations. The information from which this chart can be developed is obtainable from such local sources as associations of service station owners and operators and oil company distributors and jobbers. Additional data may be obtained from such governmental entities as the Federal Energy Administration and its state/local counterparts, The Federal Highway Administration,[37] and the state department of revenue. Examples of specific references which provide data on the distribution or sales of gasoline are: (a) Waterborne Commerce of the U.S., U.S. Department of Army, Corps of Engineers, 1971.[46] (b) Taxation Figures, State of Massachusetts, 1972.[53] (c) Bureau of Census, 1967 Retail Trade, Service Station Sales.[54]

Once these distribution data have been obtained, hydrocarbon emissions should be computed using reliable emission factors such as those contained in the American Petroleum Institute publications and Supplement No. 1 to the EPA Compilation of Air Pollutant Emission Factors (AP-42).[27] These factors should be adjusted to reflect the meteorological conditions of the area being inventoried.

2. Dry cleaning losses:[52] Clothing and other textiles are dry cleaned by treatment with organic solvents which are either of two types: petroleum or perchloroethylene.

   Petroleum, or "Stoddard" solvents, are predominatly light hydrocarbons with boiling ranges from 154°C (310°F) to 213°C (415°F). They are basically mixtures of aliphatic, alicyclic, and aromatic hydrocarbons. These are not used to the extent they once were.

   Perchloroethylene, or "synthetic" solvent, is a pure liquid with a boiling point of 121°C (250°F). Although it is nonflammable, it can be decomposed to form toxic and corrosive substances when exposed to a heat source.

   Nearly 100 percent of the solvent used in dry cleaning is emitted to the atmosphere. The primary source of this loss is the tumbler through which hot air is circulated to dry the clothes.

3. Degreasing losses:[52] Degreasing operations are used to clean metal surfaces, usually as a preparation for subsequent coating or joining processes. Vapor degreasing, almost always with chlorinated hydrocarbons, is the most common method and accounts for most of the solvent emissions from metal-cleaning operations. Cold-solvent cleaning, in which the object to be degreased is immersed in the liquid solvent, is less common and employs both chlorinated and nonchlorinated solvents. In vapor degreasing, the metal object is lowered into a tank and is cleaned by hot solvent vapors which condense on the colder metal surface and drip back into the liquid reservoir of the tank. The

basic degreaser is equipped with a cover, a heater to vaporize the solvent, and a condenser jacket near the top of the tank to minimize vapor loss.

Emissions from a degreaser tank depend upon several design and operational factors, including tank and condenser design parameters, the use of a tank cover, air currents over the surface, and the time allotted for drainage.

4. Surface coating losses: Losses from surface coating application operations are generally subdivided into four categories: (a) paints, varnishes, lacquers, etc.; (b) inks; (c) fabric coatings; (d) miscellaneous coatings such as adhesives, photographic film, magnetic tape, and fluorescent bulb coatings.

   a. Paints - industrial: The application of paint, lacquer, varnish, enamels, and other materials may be accomplished by brushing, rolling, spraying, flow coating, or dipping. Spraying, the most common application method, usually involves the use of compressed air to force the paint through a gun which sprays the object to be coated. Overspraying can result in large amounts of paint loss and causes particulate paint emissions.

      The volatile portion of most common surface coatings averages approximately 50 percent and most, if not all, of this is emitted during the application and drying of the coating. The compounds released include aliphatic and aromatic hydrocarbons, alcohols, ketones, esters, alkyl and aryl hydrocarbon solvents, and mineral spirits.

   b. Printing inks: There are five basic types of printing operations: letterpress, flexographic, gravure, lithographic, and screen. Whether or not hydrocarbon emissions occur depends on the particular type of ink used for particular methods of application.

      The flexographic and gravure processes, which account for approximately one-third of all inks used, employ inks containing 40 to

75 percent solvent, which is then evaporated upon drying. Also used are waterbased inks which contain less (0 to 30 percent) solvent for faster drying. Letterpress and lithographic inks are oil-based and occasionally emit some solvents. In addition, alcohol-type solvents are employed in the water fountain or the lithographic process.

c. Fabric coatings: This subcategory includes such operations as the manufacture of coated and impregnated textiles, rubberized fabrics, and other miscellaneous coated products such as insulating tapes and pipe wrap. The techniques most commonly used are: (1) impregnation or saturation process; (2) surface coating process ("wet," "dry," or "lamination").

Fabric coating processes account for about 25 percent of all industrial coating emissions. However, only the saturation and "wet" surface coating processes use large enough amounts of solvent to result in substantial emissions upon drying or curing the coated material.

d. Lossess from other surface coatings: This subcategory encompasses such processes as paper treatment, leather refinishing, manufacture of magnetic tape, flourescent tubes, and photographic film.

The emissions which result upon drying of the solvent-based coatings primarily consist of toluene, linear alcohols (e.g., ethanol), ethyl acetate, naptha, and methyl-ethyl-ketone.

Alternatives for Emissions Estimation. A number of approaches may be taken to estimate dry cleaning, degreasing, and surface coating losses. Questionnaires mailed to all establishments within the survey area that ask for individual solvent usage figures will yield the most accurate data, provided a high percentage of those contacted respond. If figures are available only in volumetric units, the average density for the solvents used should also be obtained and converted to mass units.

A second approach involves using data obtained from major manufacturers and suppliers of the solvents in the survey area. The disadvantage with this method is that not all of the solvents supplied to the users all consumed since a certain amount is stored, returned, or discarded. Therefore, a certain amount of effort is associated with this estimation technique.

For degreasing and industrial surface coating operations, solvent usage may be apportioned according to numbers of manufacturing employees associated with those industries in the study area.[15] Though not as accurate as surveys of users and suppliers, this technique does yield reasonable estimates, and is simpler and faster than distributing and analyzing questionnaires.

Another technique for solvent usage estimation (particularly applicable to dry cleaning operations) employs Census of Business[55] (U.S. Department of Commerce) information on dollar receipts from customers. These data, when multiplied by a conversion factor (e.g., liters of solvent used per dollar spent), yield solvent consumption data. Needless to say, this technique provides, at best, a rough estimate of area-wide usage. It yields better results when used with a large-scale (preferably nationwide) inventory.

The last approach, which is not as accurate as a survey but much easier to employ, is to assume that solvent use is proportional to population; for dry cleaning operations, the use of either of two factors, 2 pounds of solvent evaporated per person per year for moderate climates or 2.7 pounds per person per year for colder climates, will provide reasonable estimates.[27] Use of solvents for other purposes is much more difficult to correlate with population, however. Solvent use may range as high as 60 to 70 pounds per capita per year. A national average of 30 to 50 pounds per capita per year may be used to predict county solvent use, but this method will provide only a very rough estimate of solvent use.

NADB Methods. The following methods are used by NADB to estimate evaporative losses.

1. Gasoline use: Total gasoline use is summed and recorded in spaces 48-52, Section 4. State gasoline sales totals are obtained from

Highway Statistics.[37] Highway uses of gasoline are apportioned to counties based on county service station sales obtained from the Census of Business.[34] Nonhighway gasoline use, which accounts for a relatively minor portion of the total use, is assumed to be proportional to the off-highway gasoline use calculated for each category.

2. Organic solvent use: All uses of organic solvents are summed and reported in spaces 42 through 47, Section 4. Nationwide solvent use totals are derived for surface coating, degreasing, dry cleaning, printing and publishing, rubber and plastics manufacture, and miscellaneous solvent use.[25] The totals for each category are apportioned to counties based on various apportioning parameters. Surface coating applications are separated into trade points and industrial surface coating uses. Solvent use for trade points (sales to the general public, commercial-institutional, and small industrial users) is apportioned to counties on the basis of population. Industrial surface coating solvent use is apportioned to counties based on employment in specific industrial categories. Degreasing solvent use is apportioned to counties according to total employment in SIC groups 34-49, the industries in which most degreasing operations occur. Dry cleaning solvent use is apportioned to counties based on employment for SIC's 7215, 7216, and 7218. Printing and publishing solvent use is allocated according to employment in SIC groups 264, 265, and 27. Rubber and plastics solvent use is distributed by county employment in SIC group 30. Miscellaneous solvent use is distributed half on the basis of population and half on the basis of total industrial unemployment. The miscellaneous solvent use total presumable includes other nonspecified industrial uses and commercial sales of a wide variety of solvent-containing products. Estimation of total solvent use for these miscellaneous categories is a highly speculative procedure. The situation is complicated by the fact that many of the organic chemicals used as solvents are also used in nonsolvent applications.

Estimation of emissions for these categories is based on the uncertain assumption that all solvents sold are eventually evaporated to the atmosphere. The best available estimates indicate that from 10 to 40 percent of total solvent sales may be accounted for by miscellaneous unidentified sources.

MISCELLANEOUS SOURCES

Each of the source categories contained in this section can produce large quantities of air pollutant emissions. The techniques for collection of the required data and estimation of emissions are normally not as refined as the methods for other area sources, however. Each type of source included in this section is discussed individually, and the best available means for making emission estimates are presented. The miscellaneous sources are characterized by intermittent emissions, rather than the more or less continuous emissions that are associated with the other source categories. This means that even though the total emissions contributed by these sources may be relatively small, on particular days their contributions to the total emissions can be quite significant.

For NEDS, NADB has used the following methods to obtain the area source data. While extensive reliance has been placed on the cited literature references, data collection efforts have been sponsored to collect available local data needed for forest wildfires, slash burning, agricultural field burning, and fugitive dust sources. Since for many areas the data needed were not readily obtainable, the estimation techniques described for each category have been relied upon to fill the data gaps.

Forest Wildfires (spaces 38-47, Section 5). Emissions from forest fires can be very significant. Estimates of the quantity and type of growth burned should be available from the U.S. Forest Service, state forestry or agriculture departments, or local fire protection agencies. In addition, the U.S. Forest Service annually publishes Wildfire Statistics,[60] which gives the total acreage burned for each state; however, this document does not provide data on acreage burned by counties. For this reason, it is much better to consult with local officials for estimates of acreage burned. If it is not possible to obtain sufficient informations from local officials, the state total from Wildfire Statistics should be apportioned to counties according to forest acreage per county. If this information is not available from the appropriate state or local agency, the total acreage burned can be divided equally between counties with significant forest acreage, as shown on state maps.

The determination of tons of growth burned per acre ("fuel loading") is equally important. Local officials should be contacted for this information. If they cannot provide an estimate, the value from the table in Volume V[3] that best describes the growth burned should be selected. The emissions for each pollutant in the study area are then best obtained by multiplying the appropriate emission factor by the fuel loading and by multiplying this product, in turn, by the amount of forest acreage burned. Emission factors for forest fires are included in AP-42, Supplement No. 5.[27]

Managed Burning (spaces 48-56 of Section 5). Waste from logging operations is often burned under controlled conditions both to reduce the potential fire hazard in forest and to remove brush that can serve as a host for destructive insects. Because of the magnitude of this operation in certain areas, if certain meteorological conditions exist when slash burning takes place, a serious air pollution problem can result. Officials of the U.S. Forest Service or the state forestry department should be contacted to provide estimates of the area burned and quantity of slash per acre. If an estimate of the quantity of slash burned per acre cannot be obtained from other sources, use the factor of 75 tons per acre.

Prescribed burning is often used as a forest management practice to establish favorable seed-beds, remove competing underbrush, speed up nutrient cyclying, control tree pests, and otherwise enhance the ecological benefits of fire to forests. Likewise, officials of the U.S. Forest Service or the state forestry department should be contacted to determine the extent of prescribed burning. Fuel loadings normally average about 3 tons per acre if no other data are available.

Agricultural Field Burning (spaces 57-65, Section 5). This category includes such operations as grass stubble burning, burning of other agricultural crop residues, and burning of standing field crops as part of the harvesting. No published information is known to be available on this subject, and data must be obtained from knowledgeable local officials such as state agriculture departments or extension services. Estimates of acreage burned and fuel loading per acre should be obtained. If no other data are available, fuel loadings for grass burning are usually 1 to 2 tons per acre. For sugar cane burning, fuel loadings may range from 6 to 12 tons per acre.

Fugitive Dust. Sources of fugitive dust which may be considered as area sources include motor vehicle travel on unpaved roads, aircraft LTO cycles on unpaved airstrips, agricultural land tilling, heavy construction sites, and wind-blown dust from soil erosion. A multitude of other sources exist which may be sources of fugitive dust suitable for treatment as area sources. Examples would be airborne dust from paved roads and parking lots, sanding of snowcovered roads, livestock feed lots, open pit mining and tailings piles from mining operations, logging operations, and miscellaneous agricultural operations such as fertilizer application and crop harvesting. At present NADB does not have adequate source data or emission factors to make emission estimates. They may be entered into NEDS using the procedure described under "Hand-calculated Emission Estimates," in this section. Due to the complexity involved in making emission estimates for fugitive dust sources, it is suggested that interested persons review references 61 and 62 before making their own emission estimates.

1. Unpaved roads (spaces 10-16, Section 5): Vehicle traffic over unpaved roads, parking areas, and recreational areas can cause large quantities of dust to become airborne. The primary factors affecting

the amount of dust generated are vehicle speed and type of surface. Other variables influencing dust emissions are the wind speed, surface moisture, and type of vehicle. To determine the dust emissions, it is necessary to estimate vehicle-miles of travel on unpaved roads. Such estimates, or at least the total mileage of unpaved roads, may be obtained from state highway departments. If only miles of unpaved roads are available, the average traffic volume must be estimated. Estimation of average traffic volume should take into account the type of road (primitive, unimproved, graded, or gravel) and location (urban, rural, suburban, etc.). Emissions may then be calculated using emission factors. Suggested emission factors for unpaved roads are included in Compilation of Air Pollutant Emission Factors,[27] Supplement No. 5. NADB has compiled VMT on unpaved roads by county.[65] County unpaved road mileage derived from state mileage data[37] is apportioned to counties on the basis of rural population density. Average traffic volume as a function of rural population density has also been derived based on data for a selected number of states. These factors are combined to produce VMT by county.

2. Unpaved airstrips (spaces 17-21, Section 5): Many of the same factors affecting emissions from unpaved roads also are applicable to unpaved airstrips. To estimate aircraft LTO's on unpaved airstrips, the operators of such airfields should be contacted. NADB has compiled LTO cycles for unpaved airstrips based on data from the Federal Aviation Administration[66] showing U.S. airstrips by surface type and number of based aircraft at each airstrip.

3. Agricultural land tilling (spaces 33-37, Section 5): Dust may result from several of the tilling operations necessary for soil preparation. The soil type and the desired change in soil structure determine the particular tilling procedure which is used. Tilling techniques include

rough plowing, mulch plowing, and the cutting of narrow slits in the sod into which seed and fertilizer may be placed. In any case, the soil is disturbed in a manner which changes the structure of the soil. The soil type, surface moisture, and resulting tool speed affect the quantity of dust generated. The type of equipment used and the wind speed also have some effect on dust generation. To estimate the dust emissions, the number of acres tilled must be determined. The Census of Agriculture[51] reports cropland acreage. Also, officials of state agriculture departments or county agricultural extension agents should be able to provide such data. These officials should be able to furnish information about the tillage practices used. The Census of Agriculture was used to obtain the data in NEDS. It was assumed there were three tillings for each acre of harvested cropland.[65] Emission factors for agricultural tilling are included in Supplement No. 5 to Compilation of Air Pollutant Emission Factors (AP-42).[27]

4. Heavy construction (spaces 22-27, Section 5): Road and building construction activity results in generation of dust. Land clearing, excavation, and vehicle traffic around the construction site are principal causes of dust emissions. The soil type, moisture, wind speed, and type of operations taking place are the principal facotrs influencing emissions. An estimate of the area subject to highway construction may be obtained from highway departments. Estimates of the area subject to building construction may be obtained from local public works departments or similar agencies responsible for construction permit applications. To estimate the extent of construction activity for NEDS, state level construction employment data[67] have been converted to acres of construction[65] and the resulting totals apportioned to counties. Emission factors for heavy construction will also be included in Supplement No. 5 to AP-42.[27]

5. Windblown dust (spaces 28-32, Section 5): In some areas, large dust emissions are generated as a result of windblown soil. Officials of the appropriate state agency, such as the state department of natural resources or department of agriculture, may be able to furnish estimates of the number of acres in each county subject to severe soil erosion. In addition, officials of the local offices of the U.S. Soil Conservation Service should be able to provide the same information. Because such estimates are usually vague, reporting the total acreage to the nearest 1,000 acres is sufficient.
6. Structural fires (spaces 73-77, Section 5): Building fires can also produce short-term emissions of air contaminants. The best procedure for determining information for this source category is to contact local fire departments, fire protection associations, or other agencies for an estimate of the number of structural fires that occur in each county during the year. In the absence of such information, it can be assumed that, based on the nationwide figures given by the National Fire Protection Association, an average of four fires per 1,000 population occur each year.[63]
7. Frost control (spaces 66-72, Section 5): In some areas orchard heaters may be used on the coldest nights of the year. The county or state department of agriculture will usually have a breakdown of the number and types of orchard heaters that are in use. Data can also be obtained from some of the citrus grove operators in the area. These sources should also be able to furnish the approximate length of time each night the units were burning. An estimate should also be obtained of the number of units fired at any one time. These data may be used to determine heater-hours of operation so that emissions may be computed using the emission factors given in AP-42.[27]

COMMENTS (spaces 10-72, Section 6)

Enter any comments necessary to explain figures or data entries in other sections of the form. Enter comments as briefly as possible, using appropriate abbreviations. Do not exceed the space provided on the form.

HAND-CALCULATED EMISSION ESTIMATES

Section 7 of the area source form is an optional section that may be used to enter hand-calculated emission estimates for any source category or to add emission estimates for a source category not included in Sections 1-5. These features are desirable since, in order to achieve more accurate emission estimates, it is sometimes possible to calculate emissions according to a more detailed procedure using more extensive source data than would normally be used for the standard computer-calculated emissions. The source categories for which hand calculation is probably most desirable are light - and heavy-duty motor vehicle travel, aircraft, and fugitive dust sources. However, hand-calculated emissions may be entered for any other category on Sections 1-5 also. In some areas, rather unique source categories may exist. If adequate data are available, emissions estimates for these source categories may be added to NEDS, entering the hand-calculated emission estimates in Section 7.

In order to use Section 7, code the appropriate data as follows:

1. Indentification: Enter the proper state code (spaces 1-2), county code (spaces 3-6), and AQCR code (spaces 7-9) based on the proper SAROAD codes. Data for different counties may be coded on the same form, provided that the identification is properly coded each time.
2. Year of record: Enter the last two digits of the year for which the data are representative in spaces 10-11.
3. Source code: Enter the proper two-digit source code from Volume V[3] which relates to a source category in Sections 1-5 or to a new source category to be added in spaces 12-13. Note from the table in Volume V that there are a limited number of new source categories which may be added for any one county.

4. Source emission estimates: Enter the hand-calculated emission estimates in tons per year for the appropriate pollutants: particulates, spaces 14-19; sulfur oxides, spaces 20-24; nitrogen oxides, spaces 25-30; hydrocarbons, spaces 31-36; and carbon monoxide, spaces 37-43. The procedure for changing or deleting these emission estimates is described in the action code section.
5. Comments: Enter in spaces 44-77 any comments which are appropriate. For emission estimates for a category given on Sections 1-5, the comment should preferably identify the method used to hand-calculate the emission estimates. For a new category not included on Sections 1-5, the comment must identify the new source category. The calculation method may be identified in the remaining spaces if possible.
6. Action code: In space 78, enter the proper action code from the table in Volume V. Normally an "A" will be used to indicate that a section (card) is being added, but a "C" may also be used to indicate a change to existing data. Do not use code "D" in space 78. To delete the source emission estimates or comments on Section 7 a special coding procedure is required. Normally the source emission estimates entered in spaces 14-43 will be substituted (or added for a new source category) for the normally computer-calculated emissions. To delete the source emission estimates so that the computer-calculated emissions will be used instead, code a -2 (minus two) right justified in the appropriate source emission estimates field. For example, to delete existing source emission estimates for particulates "-2" would be coded in space 18-19. Similarly, if it is desired to code a blank or an "I don't know" source emission estimate for a source category, code a -1 (minus one) right justified in the appropriate source emission estimates field. If a "-1" is so entered, the normally computer-calculated emissions will be replaced with a blank to indicate that emissions are unknown or no reliable estimates

are possible. It is expected that use of "-1" will be necessary only on rare occasions.

7. Spaces 79-80 are preprinted to identify NEDS area source format.

REFERENCES

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GENERAL

For a general description of the Point Source Form, refer to Section 2.1.2 and Figure 2.1.2-a.

The NEDS Point Source Form (Figure 3.1.2-a) is used to organize emissions data into computer-readable format for key punching and subsequent entry into computerized data files. Therefore, the POINT SOURCE FORM must be COMPLETED CORRECTLY.

In the following discussion several words will be used for which the following definitions are necessary.

FORM - the NEDS Point Source Form divided into seven horizontal rows of squares, numbers, and words - each horizontal row represents a card.

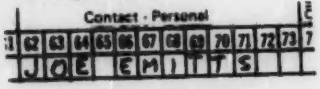
CARD - 80-column computer punch card.

COLUMN - one of the vertical columns on the card. The numbers on the form refer to these columns.

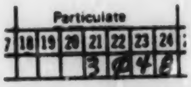
FIELD - a COLUMN or group of COLUMNS; only one subject to a FIELD. A FIELD is identified on the FORM by vertical lines extending above the COLUMN numbers. The name of the FIELD is printed between the vertical lines.

LEFT JUSTIFY - the entry in the FIELD starts at the left side of the FIELD - always alphabetic.

RIGHT JUSTIFY - the entry in the FIELD starts at the right side of the FIELD - always numeric.



LEFT JUSTIFY



RIGHT JUSTIFY

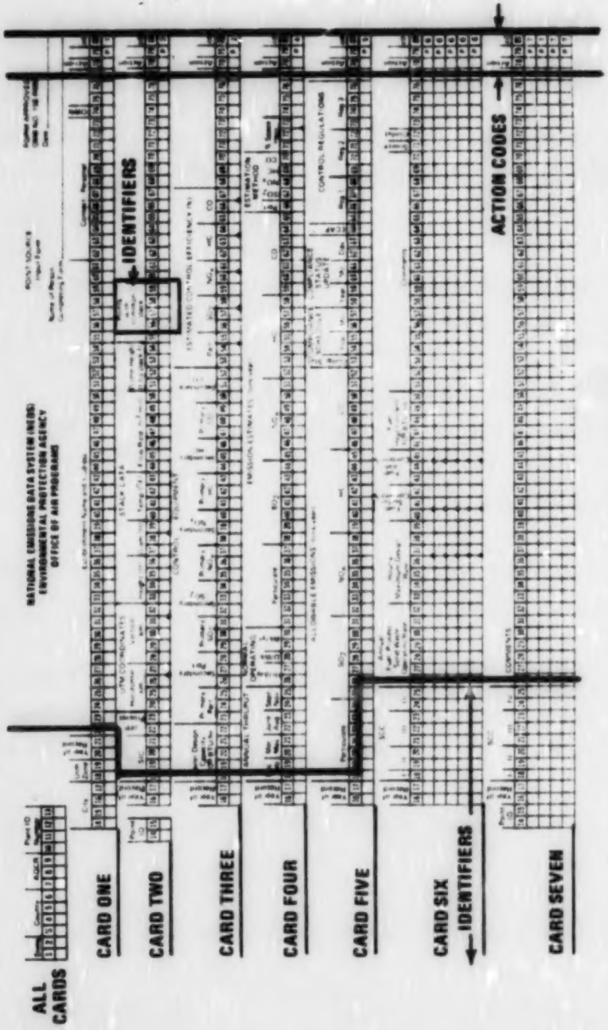

NATIONAL EMISSIONS DATA SYSTEM (NEDS)
ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF AIR PROGRAMS
POINT SOURCE Input Form
IDENTIFIERS
ACTION CODES
ALL CARDS
CARD ONE
CARD TWO
CARD THREE
CARD FOUR
CARD FIVE
CARD SIX
IDENTIFIERS
CARD SEVEN
ESTIMATED CONTROL EFFICIENCY (%)
EMISSION ESTIMATES
ESTIMATION METHOD
CONTROL REGULATIONS
ALLOWABLE EMISSIONS
STACK DATA
CONTROL EQUIPMENT
UTM COORDINATES
ANNUAL THRUPUT
OPERATING
SCC
COMMENTS

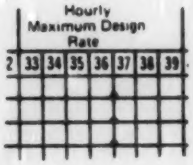
Figure 3.1.2-a. NEDS Point Source Form.

The terms high order or low order position are synonomous with left justify or right justify, respectively, and will not be used in this discussion.

For the Point Source Form the following applies:

Left Justify - letters or alphabet
Right Justify - numbers or data

The only violation of the above right and left justify rule involves a decimal point. The decimal point is indicated by a triangle preprinted on the form. The data are entered so that the decimal point in the data corresponds to the triangle on the form. Zeros are entered in the remaining columns of the field.



The entire form may be divided into three areas named identifiers, control codes, and data fields.

The identifiers do just as the name implies - identify plant name, geographical location, date, etc.

IDENTIFIERS FOR EACH CARD (NO BLANKS ALLOWED)

Card No.	Columns (incl.)
1	1 to 13 + 14 to 21
2	1 to 13 + 14 to 17
3	1 to 13 + 14 to 17
4	1 to 13 + 14 to 17
5	1 to 13 + 14 to 17
6	1 to 13 + 14 to 17 + 18 to 25
7	1 to 13 + 14 to 17 + 18 to 25

The one exception to NO BLANKS in the IDENTIFIER area concerns the City Code on Card One, Columns 14-17. This exception is discussed later in this section.

The control codes tell the computer what action is required.

Column	CONTROL CODES FOR EACH CARD (NO BLANKS ALLOWED)		
78	A-add	C-change	D-delete
79	P-point	This code is preprinted	
80	Card No.	This code is preprinted	

All control codes must be filled in for each card that is to be keypunched.

The rest of the form constitutes the data fields. The discussion that follows applies to the fields individually or in groups. It will start with CARD ONE and continue through CARD SEVEN. The information will be presented in text form and graphically through examples.

TEN BASIC FACTS AND RULES

1. Legibility is mandatory. Print using block capital letters.
2. Characters - slash zeros (Ø) and (Ƶ).
3. DON'T change field names.
4. Decimal point - only when a triangle is preprinted in field.
5. To indicate Nonapplicable, use lone right justified zero in field.
6. NO DATA - blank field.
7. Identifiers must be complete! Otherwise computer rejects.
8. Control Codes must be complete! Otherwise computer rejects.
9. DON'T use fields (or columns) without names (headings).
10. Letters left justify; numbers right justify.

CARD ONE

The purpose of Card One is to identify and locate a facility that has been determined to be a point source.

STATE, COLUMNS 1-2

Enter the two-digit code for the state within which the point source is located. The District of Columbia, Puerto Rico, American Samoa, Guam, and the Virgin Islands are to be considered 'States' for coding purposes. The codes are in State Identification Numbers Table, AEROS Manual, Volume V, Section 2.1.0.

The entry is right justified, zero filled, with no blanks.

COUNTY, COLUMNS 3-6

For the NEDS Point Source coding, all states except one use counties. The county codes and the one exception are in the City-County Identification Table, AEROS Manual, Volume V, Section 2.2.0. The one exception where counties are not used is Massachusetts, and this state requested to use their own Air Pollution Control Districts (APCD), instead of counties. County equivalents in Alaska are called election districts, and in Louisiana they are called parishes.

Cases when a city is considered a separate entity and not part of a county are discussed under City later in this section.

The entry is right justified, zero filled, with no blanks.

AQCR, COLUMNS 7-9

The Air Quality Control Region (AQCR) numbers are found in AEROS Manual, Volume V, Section 2.3.0. The entry is right justified, zero filled, with no blanks.

PLANT ID NUMBER, COLUMNS 10-13

The Plant (point source) ID Number is assigned by county. That is, there is a number set in each county and the numbering is sequential within each county, every plant (point source) identified. Plant ID numbers must be unique for each plant within a county. The state, county, and AQCR codes will differentiate all the plants with the same Plant ID Number. The Regional Office is responsible for assigning Plant ID numbers. The responsibility may be delegated. Once assigned, a plant ID should not be changed.

In most cases, the simplest and most meaningful method for assigning plant ID is to begin with 0001 and number the plants sequentially up to however many plants are in the county. Some agencies prefer to assign other special code numbers, and this is acceptable. Use of alphabetic codes or a alphanumeric combinations for Plant ID is also acceptable; however, care should be taken to ensure that any desired sort order for the plants within a county on reports will not be disrupted by the assignment of alphanumeric ID's. The sequence for sorting is that alphabetic ID's follow numeric ID's. Alphanumeric ID's may fall between numeric ID's. As examples, an ID of 000A would follow 0009 and precede 0010 in the sort order, A001 would follow 9999 and precede B001, etc. For additional discussion on this topic, see the discussion later in this section on assignment of point ID.

In all cases, no blanks are allowed in the plant ID field. Entries must be zero filled as necessary.

If a plant ceases operation, change the emission estimation method code to 7. Do not delete the plant from the file. See Card 4, "Estimation Method Code," for additional details.

CITY, COLUMNS 14-17

If the Point source is within the city limits, a code for the city is listed in City-County Identification Table, Aeros Manual, Volume V, Section 2.2.0.

The only exception to the previously stated rule of no blanks in the identifier area occurs if the point source is OUTSIDE the city limits, or if the city is not listed in City-County Identification Table, AEROS Manual, Volume V, Section 2.2.0; in such cases, leave columns 14-17 BLANK.

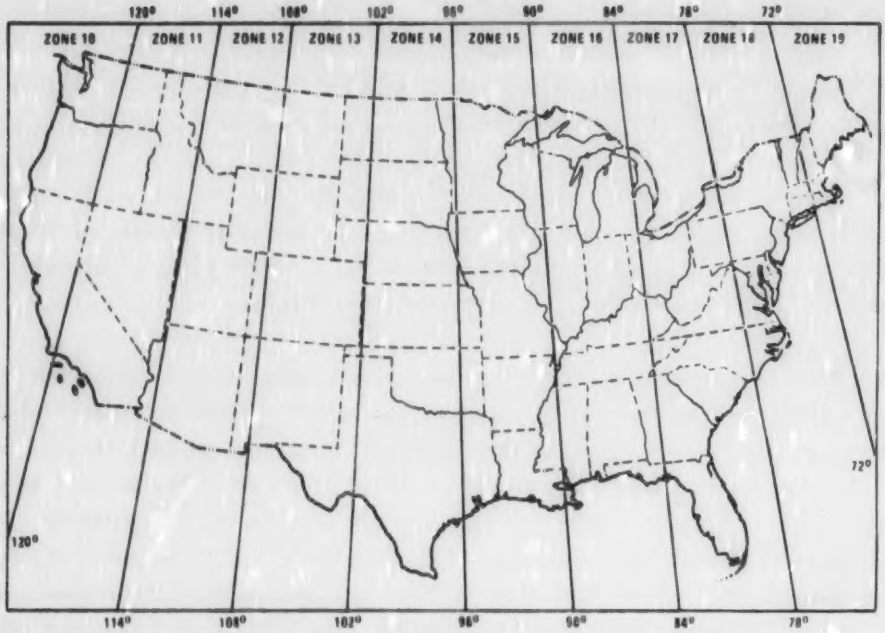
There are a few cities that are considered independent entities and are not included as part of any county. In this case the city code is entered in both County columns 3-6 and City columns 14-17. Cities known to fall in this category are Baltimore, Maryland, St. Louis, Missouri, Carson City, Nevada, and 38 cities in Virginia. For NEDS coding purposes, only nine cities in Virginia are treated as independent entities. They are: (1) Alexandria, (2) Chesapeake, (3) Fairfax, (4) Hampton, (5) Newport News, (6) Norfolk, (7) Portsmouth, (8) Richmond, and (9) Virginia Beach. Check with local authorities to determine if there are more.

The entry is right justified, zero filled, with no blanks.

UTM ZONE, COLUMNS 18-19

For mapping purposes, the world is divided into 60 zones which are sequentially numbered starting at 180° meridian and numbering to the east. The western U. S. is in zone 10, and the eastern U. S. is in zone 19. Figure 3.1.2-b shows the Continental U. S. and the zones. Table 3.1.2-a lists UTM Zones of U. S. and possessions, and Table 3.1.2-b lists UTM Zones by state. Enter the zone number for the location of the source in question.

The entry is right justified, zero filled, with no blanks. Further discussion is given under Card 2, "UTM Coordinates."



120°
114°
108°
102°
96°
90°
84°
78°
72°
ZONE 10
ZONE 11
ZONE 12
ZONE 13
ZONE 14
ZONE 15
ZONE 16
ZONE 17
ZONE 18
ZONE 19
72°
120°
114°
108°
102°
96°
90°
84°
78°

Figure 3.1.2-b. UTM grid zones in the contiguous United States.

Table 3.1.2-a.
UTM Zones of U.S. and Possessions

Area	Zone	Longitude
Continental U.S.	10-19	67°-125°W
Alaska	01-09	120°-180°W
Hawaii	04-05	154°-80°W
Puerto Rico	19-20	65°-68°W
Virgin Islands	20	64°-66°W
Guam	55	144°-145°W
American Samoa	02	171°-172°W

Table 3.1.2-b.
UTM Zones by State

State	Valid Zone No.[a]
01 Alabama	16
02 Alaska	01-09
03 Arizona	11-12
04 Arkansas	15-16
05 California	10-11
06 Colorado	12-13
07 Connecticut	18-19
08 Delaware	18
09 District of Columbia	18
10 Florida	16-17
11 Georgia	16-17
12 Hawaii	04-05
13 Idaho	11-12
14 Illinois	15-16
15 Indiana	16
16 Iowa	14-15
17 Kansas	14-15
18 Kentucky	16-17
19 Louisiana	15-16
20 Maine	19
21 Maryland	17-18
22 Massachusetts	18-19
23 Michigan	16-17
24 Minnesota	14-15
25 Mississippi	15-16
26 Missouri	15-16
27 Montana	11-13
28 Nebraska	13-15
29 Nevada	11
30 New Hampshire	18-19
31 New Jersey	18
32 New Mexico	12-13
33 New York	17-18
34 North Carolina	17-18
35 North Dakota	13-14
36 Ohio	16-17
37 Oklahoma	13-15
38 Oregon	10-11
39 Pennsylvania	17-18
40 Puerto Rico	19-20
41 Rhode Island	19
42 South Carolina	17
43 South Dakota	13-14
44 Tennessee	15-17
45 Texas	13-15
46 Utah	12
47 Vermont	18-19
48 Virginia	17-18
49 Washington	10-11
50 West Virginia	17-18
51 Wisconsin	15-16
52 Wyoming	12-13
53 American Samoa	02
54 Guam	55
55 Virgin Islands	20

[a] Zone number must be within range indicated.

YEAR OF RECORD, COLUMNS 20-21

Enter the year of record for that data that are entered on Card One. The entry is right justified, zero filled, with no blanks.

NAME AND ADDRESS, COLUMNS 22-61

The name and address should describe the physical location of the point source. Enter the name the point source used or the name the agency has on record. Enter a street address for the point source, if possible. DO NOT use the name and address of some distant headquarters. Use common abbreviations, do not use periods, and leave blanks between words to ensure a readable entry. The city, county, and state have previously been entered, so do not repeat. However, if the city does not appear in City-County Identification Table, AEROS Manual, Volume V, Section 2.2.0, then the city must be entered in this field. Use columns 57-61 for the zip code.

The entry is left justified.

CONTACT - PERSONAL, COLUMNS 62-73

Enter the name of the person who should be contacted with regard to activities. This entry is left justified.

OWN(ERSHIP), COLUMN 74

Enter a one letter code for the type of ownership of the point source as follows:

P	Private
L	Local Government
S	State Government
F	Federal Government
U	Utility

No blanks are allowed.

COLUMNS 75-77

These columns are not used - Leave Blank. Any entries will not be accepted by the computer.

ACTION, COLUMN 78

Enter a letter code for the type of action as follows:

A Add
D Delete
C change

No blanks are allowed.

An add code (A) entered on Card One is used to add a new plant to the file. A delete code (D) is used to delete an entire plant from the file. Use of a D in column 78 of Card One results in deletion of all subsequent data for all points at the plant. A change code (C) is used only to change a given data field on Card One. Enter data only for the field or fields to be changed.

COLUMN 79

This column is preprinted with a P for Point Source.

COLUMN 80

This column is also preprinted with a card number. Formats of all of the cards are printed horizontally on one sheet. Be sure you are entering data in the correct column on the correct card, check column 80.

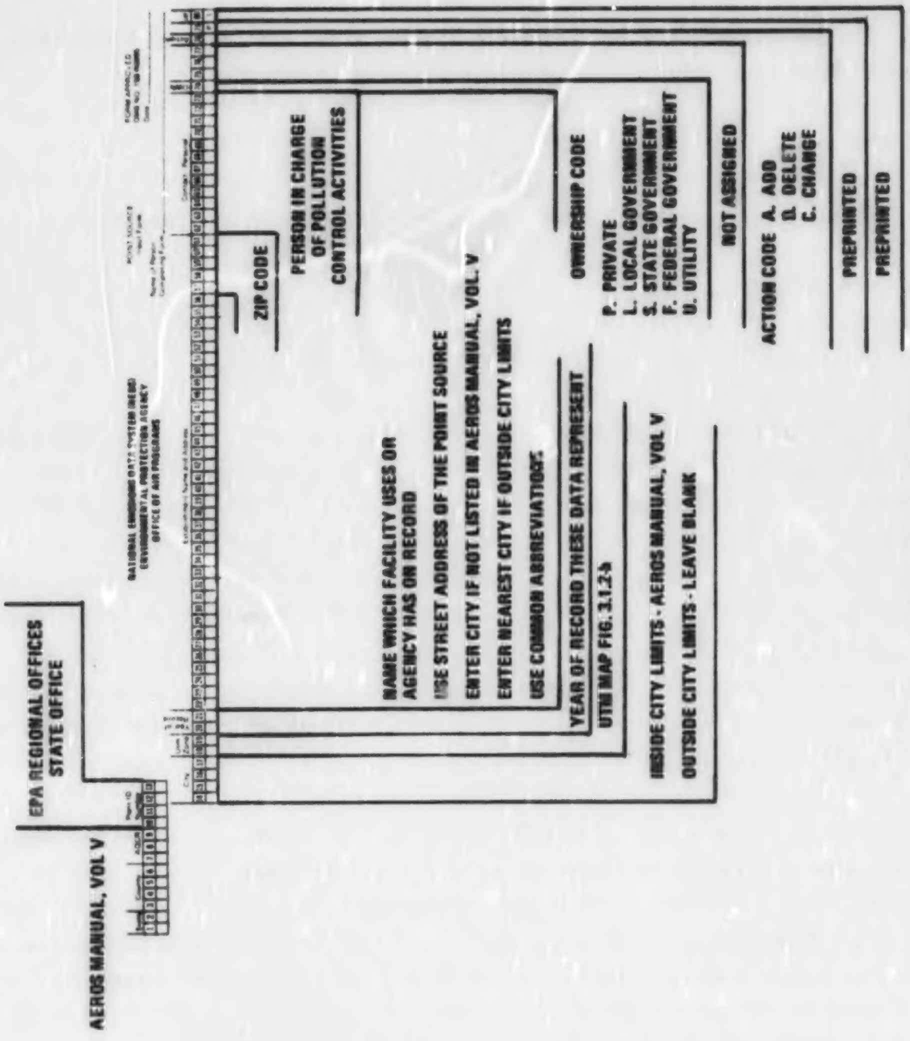
SUMMARY

Instructions for completing Card One are summarized in Table 3.1.2-c and illustrated in Figure 3.1.2-c.

Table 3.1.2-c. Summary of Instructions for Card One[a]

Column	Data Source	L	R	Ø	B	Remarks
1-2	AEROS Manual Vol. V		X	X		< 56
3-6	AEROS Manual Vol. V		X	X		
7-9	AEROS Manual Vol. V		X	X		< 248
10-13	Local Assignment		X	X		Only exception, leave blank if outside city limits or not listed
14-17	AEROS Manual Vol. V		X	X		
18-19	UTM Map		X	X		Continental U. S. < 20
20-21	Year of Record this data represents		X	X	X	
22-61	Name of facility	X				
	Address of Point Source					
57-61	Zip Code		X	X		
62-73	Person in charge of pollution control activities	X				
74	Own P Private L Local Govt. S State Govt. F Federal Govt. U Utility	X			X	
75-77	Not Used					Leave Blank
78	Action Code A-Add D-Delete C-Change	X		X		
79	Preprinted	X		X		
80	Preprinted card 1 thru 7		X	X		

[a] L - left justify, R - right justify, Ø - zero fill, B - no blanks.



AEROS MANUAL, VOL V
EPA REGIONAL OFFICES
STATE OFFICE
NATIONAL EMISSIONS DATA SYSTEM (NEDS)
ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF AIR PROGRAMS
POINT SOURCE
ZIP CODE
PERSON IN CHARGE OF POLLUTION CONTROL ACTIVITIES
NAME WHICH FACILITY USES OR AGENCY HAS ON RECORD
USE STREET ADDRESS OF THE POINT SOURCE
ENTER CITY IF NOT LISTED IN AEROS MANUAL, VOL. V
ENTER NEAREST CITY IF OUTSIDE CITY LIMITS
USE COMMON ABBREVIATIONS
YEAR OF RECORD THESE DATA REPRESENT
UTM MAP FIG. 3.1.2-b
INSIDE CITY LIMITS - AEROS MANUAL, VOL V
OUTSIDE CITY LIMITS - LEAVE BLANK
OWNERSHIP CODE
P. PRIVATE
L. LOCAL GOVERNMENT
S. STATE GOVERNMENT
F. FEDERAL GOVERNMENT
U. UTILITY
NOT ASSIGNED
ACTION CODE A. ADD
D. DELETE
C. CHANGE
PREPRINTED
PREPRINTED

Figure 3.1.2-c. Card One.

CARD TWO

The purpose of Card Two is to (1) provide stack data and (2) identify and locate emission points.

COLUMNS 1-13

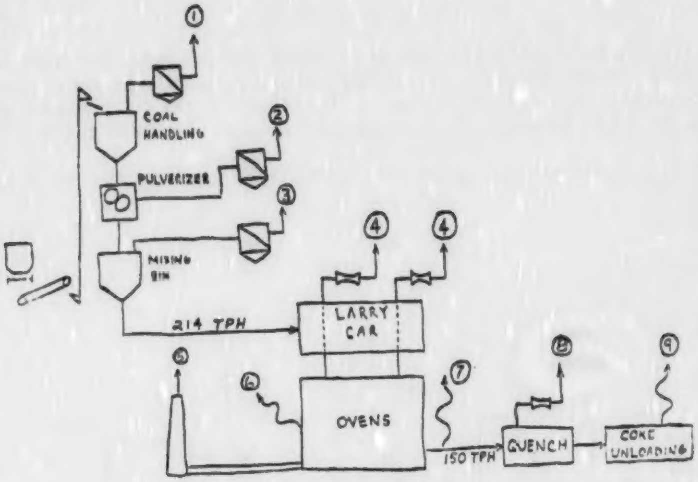
These columns were discussed in the previous section for Card One.

POINT ID, COLUMNS 14-15

The entry is right justified, zero filled, with no blanks.

The "Point ID" is assigned from information available on a local basis and knowledge of the plant whether from visits or from a questionnaire. The distinction between point source and emission point is necessary to assign "Point ID" numbers. A point source may be one or many emission points; the total of which constitutes a plant or facility. "Point ID" identifies an emission point within such a point source. The best procedure is to draw a flow diagram of the facility, such as that shown in Figure 3.1.2-d, on the back of the coding form and indicate all of the emission points. Some of the emission points may be grouped into one emission point. The determination of whether to group or not to group emission points will require exercise of qualitative judgement.

There are several ways emission points may be grouped. A stack can represent an emission point when it serves as an outlet for one unit, such as a boiler. However, when several units discharge through one stack, it is necessary to examine the characteristics of these units and the use of the stack to determine how many emission points they represent. If one process unit discharges through one or more separate stacks, this becomes one emission point. It is incorrect to assume that the number of emission points in a point source corresponds to the number of

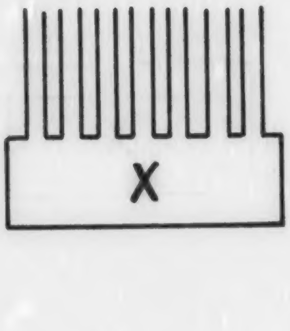


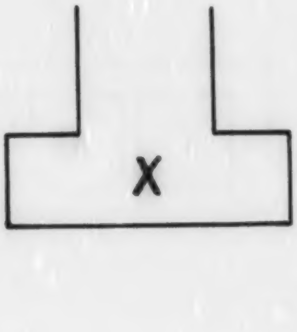
①
COAL HANDLING
②
PULVERIZER
③
MIXING BIN
④
④
214 TPH
LARRY CAR
⑤
⑥
⑦
⑧
⑨
OVENS
150 TPH
QUENCH
COKE UNLOADING

Figure 3.1.2-d. Typical Process Flow Diagram as Drawn on Back of NEDS Coding Form.

stacks. Similarly, it is incorrect to assume that the number of emission points corresponds to the number of units. A few examples will clarify grouping.

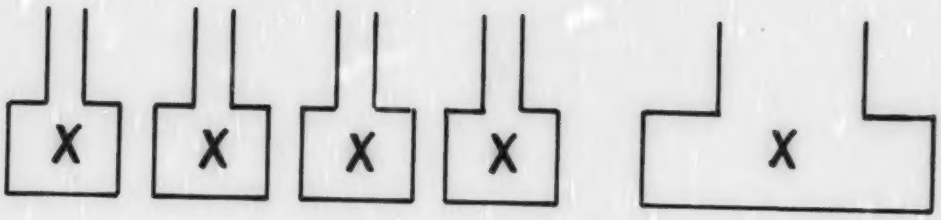
Example 1. A single unit has a multitude of vents to the atmosphere from the same process. Combine these vents into one emission point for reporting purposes.



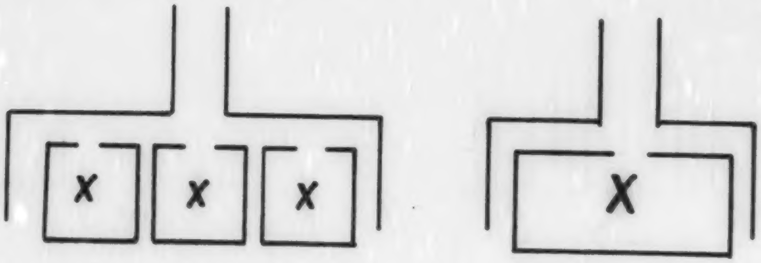


Example 2. Several small similar units each emit 5 tons per year or less of any pollutant, have the same capacity, burn the same type of fuel, discharge through separate but similar stacks. These units may be grouped and the total emissions from all stacks may be reported as one emission point.

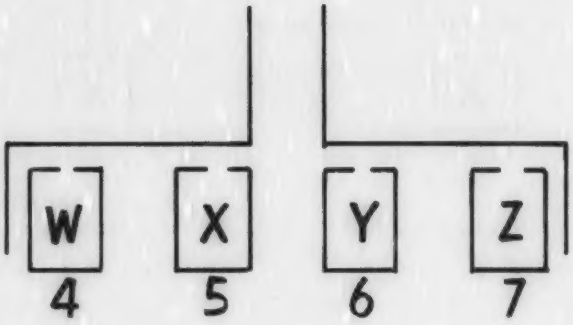
Boilers burning different fuels are not similar and may not be grouped.



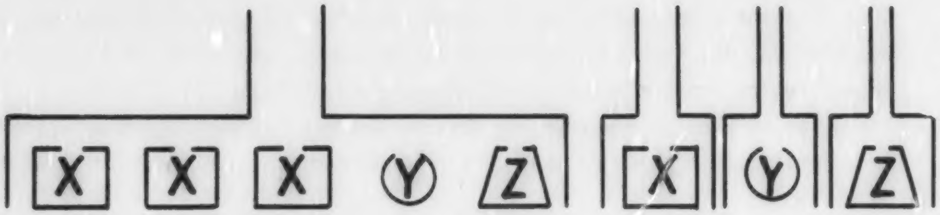
Example 3. Several small similar units having the same capacity, burning the same type fuel, discharge through one common stack, and total emission of any one pollutant is less than 100 tons per year; the units may be grouped and reported as one emission point.



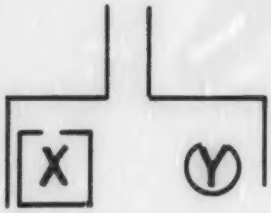
Example 4. Units with different discriptions, operating all year long but at different hours and using different types of fuels, discharge through one common stack. These units may not be grouped. They represent four separate emission points, thus four Point ID's, and a coding form must be completed for each. Note: Number consecutively.

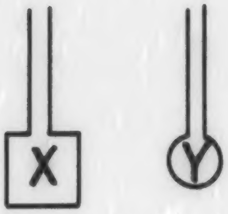


Example 5. There are three small similar units (having the same capacity, burning the same type fuel, and having the same operating hours) and two large units, each different from the other and both different from the three small similar units. The three small, similar units may be grouped. For reporting purposes, this represents three emission points, three point ID's.



Example 6. Two different units operate consecutively (never simultanously) throughout the year and discharge through one common stack. Unit X operates Monday through Wednesday; unit Y operates Thursday through Saturday. These must be reported as two emission points, two Point ID's. Seasonal operations having a common stack would fall into this category as well, as would boilers burning different fuels.





Point ID's may use either all numeric, all alphabetic, or mixed alphanumeric characters. Generally, only numeric characters are used for Point ID's. Begin numbering of points with 0 up to a maximum of 99. If a facility has more than 99 emission points, alphabetic Point ID's may be assigned for the excess above 99 points. The sequence of numbering should be 01, 02, 03 .... 98, 99, AA, AB, AC .... AY, AZ, BA, BB .... ZZ. This scheme should provide more than enough combinations to handle the number of points at a facility. The use of mixed alphanumeric ID's is not recommended unless necessary. The sequence of alphanumeric ID's would be 09, 0A, 0B .... 0Z, 10 .... 19, 1A .... 1Z. In this example, all of the points numbered 0A through 0Z would fall between points 09 and 10. Care should be taken, if mixed alphanumeric Point ID's are used, that the points-with-common-stack field (discussed later) properly reflects the ID's with the same stack. For instance "0910" would also imply that any points numbered 0A, 0B, etc. are all vented to the same stack as points 09 and 10. Therefore, to avoid a possible misinterpretation of the points-with-common-stack field, as well as to preserve any desired sequence of sorting of emission points in a facility, it is urged that only all numeric or all alphabetic Point ID's be assigned.

If an emission point ceases operation, do not delete it from the file. Change the emission estimation method code to a 7. See card 4, estimation method, for additional explanation.

YEAR OF RECORD, COLUMNS 16-17

Enter the year of record for the data that are entered on Card Two.

SIC, COLUMNS 18-21

The Standard Industrial Classification (SIC) code comes from the Standard Industrial Classifications Manual, 1973, available from Superintendent of Documents, Washington, DC. The code is a four-digit number. Do not use SIC codes from previous editions of the SIC Manual, such as the 1967 edition. Codes from older editions are not consistent with those in the 1973 edition. Also, do not use abbreviated two-digit codes with zero fill, such as "2600." Use only specific four-digit codes from the 1973 SIC Manual.

IPP, COLUMNS 22-23

The two-digit IPP (Implementation Planning Program) process code, when combined with an SIC, serves as a source identifier in the IPP dispersion modeling program. The IPP model may use NEDS point source data for input. IPP codes are listed in AEROS Volume V, Section 3.2.0. The applicable IPP code should be selected as follows:

If the process DOES NOT involve fuel combustion, the IPP code is selected from the list for specific SICs which is given in AEROS Volume V. The IPP codes are valid only for the SICs shown. DO NOT borrow IPP codes from another SIC. Some SICs are listed in Volume V with two zeroes for the last two digits or a zero for the last digit of the four digit SIC. This means that the IPP codes shown apply for any SIC with the first two or three digits shown. For example the IPP codes listed under SIC 1400, apply for any SIC with the first two digits of 14 and the IPP codes listed under SIC 2060 apply for any SIC with first three digits of 206. For a complete list of SICs refer to the SIC Manual.

If the SIC is not covered by the list in the IPP code table in Volume V and the process does not involve fuel combustion, leave the IPP code blank. There is no valid IPP code.

If the process DOES involve fuel combustion in a boiler or internal combustion engine, the IPP code is selected from the list in Volume V. These combustion code numbers may apply to any SIC. The codes specifically identified as "power plant" should be used only with electric utilities, SIC 4911.

If a boiler is multiple fueled and:

1. One of the fuels is coal, use the IPP code for coal.
2. Coal is not burned, use the IPP code for the fuel supplying the largest quantity of BTU's.

If the process DOES involve fuel combustion, but only as in-process fuel use associated with an industrial process or solid waste incinerator, assign the IPP code according to the identity of the industrial process or incinerator, as if the process did not involve fuel combustion.

The entry is right justified, zero filled, and no blanks are allowed, except as noted above.

UTM COORDINATES, COLUMNS 24-32

The Universal Transverse Mercator Projection System (UTM) was selected to provide an accurate means of locating a facility. The coordinate can be determined from a United States Geodetic Survey (USGS) map or an Army Map Service (AMS) map. This system provides maps of small areas with very little distortion.

There are several references describing the Universal Transverse Mercator System. However, these references give the theory and the development mixed in with other systems, and do not really set forth the information needed without considerable study. The world is divided around the equator into 6° zones. The UTM zones for the United States were shown in Figure 3.1.2-b. The zones are numbered from 1 to 60 in an easterly direction starting with the 180° meridian, and extend from 80° S to 84° N in height. As indicated in Table 3.1.2-a, the 55 states and territories are located in zones 1 through 20, except Guam, which is in zone 55. All are in the northern hemisphere except American Samoa.

The horizontal and vertical coordinates for each zone are independent of the others (Figure 3.1.2-e). The center meridian is always 500,000 meters east. The two vertical lines resulting from the intersection of the earth and a cylinder are parallel and 360,000 meters apart; the zone is more at the equator and less at the north and south ends. In the northern hemisphere, the vertical coordinates start at 0meters at the equator and increase in a northerly direction. In the southern hemisphere the vertical coordinates start at 10,000,000 meters north at the equator and decrease in a southerly direction.

The projection at the vertical lines is exact, i.e., has a scale of one to one. Between the vertical lines, the projection decreases to a scale of 0.99960 at the central meridian. Outside the vertical lines, the projection increases to a scale of 1.00010. This system minimizes distortion when projecting a curved surface on a flat surface.

When using the maps, some understanding of the markings is needed. There could be three different systems and more if they are military maps (Army Map Service, AMS). All maps will have latitude (north) and longitude (east) indicated by a black tick mark inside the border and a number at some interval outside the border. The corners will have complete latitude and longitude. If a state has its own coordinate system, it may or may not be on the map. If so it will have black tick marks outside the border and numbers at some interval. The UTM system will have blue tick marks outside the border and numbers at some interval. The numbers at the corners will be in meters, while

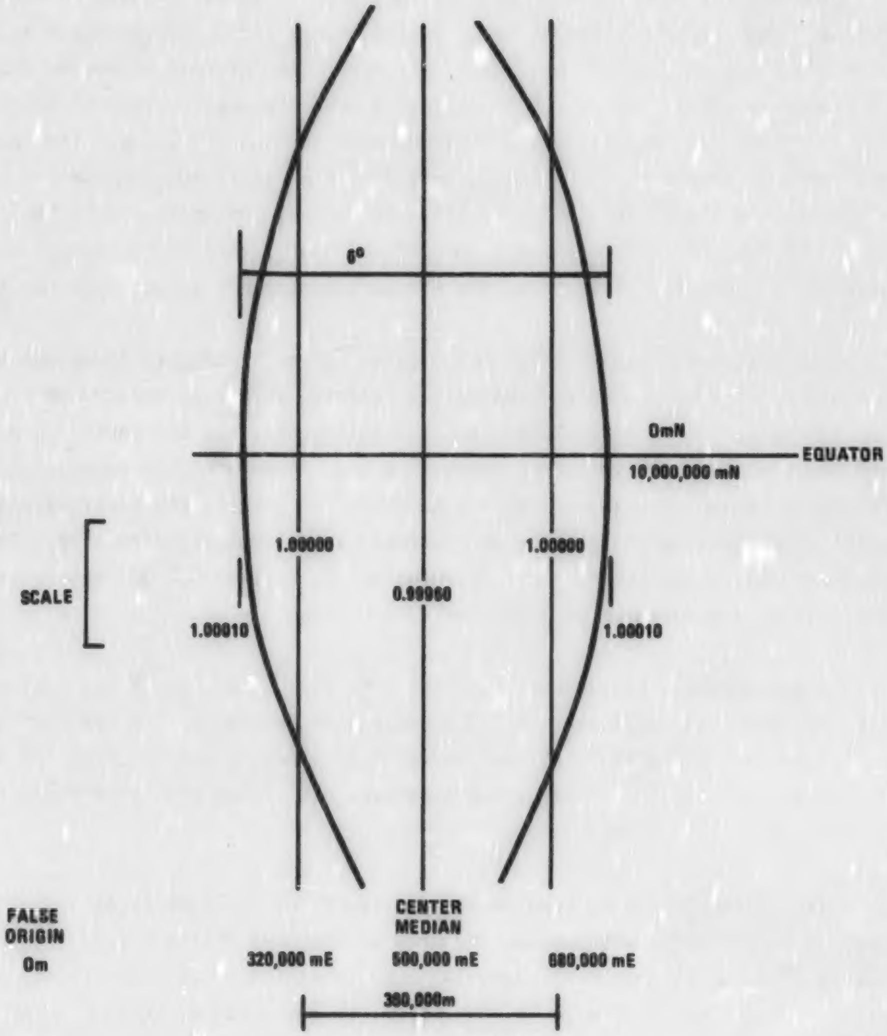

6°
0mN
EQUATOR
10,000,000 mN
1.00000
1.00000
SCALE
0.99960
1.00010
1.00010
FALSE ORIGIN
0m
CENTER MEDIAN
320,000 mE
500,000 mE
680,000 mE
360,000m

Figure 3.1.2-e. Universal Transverse Mercator 6° zone projection.

the others will be in kilometers. If the map is close to a zone border, the UTM system of the adjacent zone may be shown in black. The maps will come in several scales. The first choice is the 7.5-minute map series for emission inventory work.

Series	Scale
7.5-minute	1:24000
15-minute	1:62500
30-minute	1:125,000
1:250,000 (2° x 1°)	1:250,000

The U. S. is not completely mapped in the 7.5-minute series, and parts are not mapped in either the 7.5-minute or 15-minute series. It is not possible to set down hard and fast rules of what is available and how it is marked. Demand dictates what is available, and man-hours available dictate the updating revisions. Treat this discussion as guidelines. Use the smallest scale map series available in order to most accurately determine UTM coordinates. For NEDS coding purposes, sources are to be located to the nearest 0.1 kilometer. This means that for facilities covering a large area, it may be difficult to locate UTM coordinates for each emission point. For most facilities, however, locating all points according to a point in the center of the facility will be accurate to the nearest 0.1 kilometer.

The maps are available by mail order from:

Distribution Section
US Geological Survey
1200 South Eads Street
Arlington, VA 22202

Many large universities and public libraries maintain reference files of these maps. If mail order is used, first order an index map for the state (it is free). Then, using the names on the index, order the maps needed.

If the only data available are in degrees, minutes, and seconds of latitude and longitude, submit them on a separate sheet of paper to the Regional Office; it can be converted to the UTM coordinate system. A new procedure to allow for this conversion is being developed and will be included in this section as soon as possible.

The data entered (the zone was entered on Card One) are in kilometers (km) and tenths of a kilometer. DO NOT TRY TO ENTER LATITUDE-LONGITUDE! The triangle in the field is the decimal point.

The entry is right justified, zero filled, with no blanks.

STACK DATA, COLUMNS 33-54

Before starting to enter data in this field, which has five subfields, there are some considerations that affect the entire field. When several similar boilers that emit pollutants through separate stacks have been combined, the following procedure will be used to determine the actual stack parameters to be recorded. Calculate K_i for each individual stack using the following equation:

$$K_i = (H_i)\ (V_i)\ (T_{si})/Q_i$$

where: H_i = individual stack height, ft
V_i = individual gas flow rate, ft^3/min
T_{si} = individual stack temperature, °F
Q_i = individual emission rate of any common pollutant, T/yr

Select the stack with the lowest K_i value, and enter this stack height, diameter, temperature, and flow rate on the coding form in the appropriate fields. Enter in the "Comments" section, Card Six, the total number of boilers and the total number of stacks combined.

If there are entries in Height, Diameter, and Flow Rate fields, then the Plume Height field should contain a single right justified zero to indicate nonapplicability. Conversely, if the Height, Diameter, and Flow Rate fields contain zeros, then there must be an entry in the Plume Height field.

There are point sources that have one or more of the following characteristics:

1. No clear-cut or enclosed point of emission.
2. No stack height (e.g., burning dumps).
3. A changing locus of emissions within the facility (e.g., leaking valves at an oil refinery, dust from moving equipment in a quarry).

In such cases, the stack height, temperature, and flow rate columns on the coding form will be marked with zeros, and columns 51 through 54 will be completed.

The STACK HEIGHT, Columns 33-36, is the vertical distance between the point of emission and ground level. If an estimate of stack height must be made, that value will be rounded to the nearest 10 feet. In the majority of cases, the exact location of the discharge of pollutants will be well defined; there will be a stack or some other enclosed, constrained, or physically bounded area where pollutants are emitted. The entry is in feet, right justified, blanks allowed.

The STACK DIAMETER, Columns 37-39, is the inside diameter of a round gas exit at the point of emission; for nonround exits, it is an equivalent diameter calculated from the cross-sectional area at point of discharge. Using a measured or estimated cross-sectional area, the equivalent diameter (De) is calculated as follows:

$$De = 1.128 \sqrt{A}$$

where A is in square feet. For another common occurence--the rectangular stack exit--the equivalent stack diameter must be calculated from the total cross-sectional area; it cannot be assumed to be one of the linear dimensions. The entry is in feet and tenths of feet (note the triangle decimal point), right justified, blanks allowed.

The TEMPERATURE, Columns 40-43, of the exhaust stream at the stack exit is reported in degrees Fahrenheit under normal operation conditions. If measured temperatures are not available, an estimate to the nearest 50° F should be made. If no fuel combustion is involved in the process, and if the exhaust gas appears to be discharged at ambient air temperatures, then record the stack gas temperature as 77°F unless a definite value is known. If a plume height is entered for a source, enter 77°F for cases without combustion, and estimate the temperature for cases with combustion. The entry is in degrees Fahrenheit, right justified, blanks allowed.

The FLOW RATE, Columns 44-50, is the actual exhaust-gas volume of exhaust gas released at the operating temperature of the stack (assume gas pressure is the same as normal atmospheric pressure). When two or more boilers discharge into a common stack and each boiler is coded on a separate form, the exit-gas flow rate corresponding to each boiler is entered on the coding form. The flow rate should be reported using the following order of priority for selection:

1. Actual or measured under normal conditions.
2. Design rate.
3. Maximum rate.

The entry is in cubic feet per minute (ft^3/min), right justified, blanks allowed.

The PLUME HEIGHT, Columns 52-54, is to be filled in if the previous spaces on stack data (except temperature) all contain zeros. Conversely, if stack height, diameter, temperature, and flow rate were reported, then this column should contain a zero. The plume height is a gross estimate and is used only when the source has one of the following characteristics:

1. No clear-cut enclosed point of emission (e.g., gas leaks at an oil refinery).
2. No stack height (e.g., burning dumps).
3. A mobile emission point within the facility (e.g., quarry).
4. Pollutants released into the atmosphere at ambient temperatures through diffusion (e.g., gasoline storage tanks).

Many point sources have no true stack release points (whereby the gases are forcibly exhausted to the atmosphere from an enclosed area). In such cases, columns 51 through 54 must be completed. If there is a physically definable height above ground level where the pollutants are discharged, then enter this value (in feet) in the spaces. Examples of this class are gasoline storage tanks and uncontrolled grain-drying operations where the height of the tank or dryer would be considered the plume height. On the other hand, some sources, such as some quarries, burning dumps, and gas leaks at ground level at an oil refinery, have no discernible emission height. In such cases, enter zero in column 54. Processes that discharge emissions at ambient temperatures mainly through ground-level leakage or diffusion should also be considered to have a zero plume height. In such cases the exhaust flow rate entered in columns 44 through 50 will also be zero. Ground-level emissions which are coded zero plume height should have an appropriate temperature entered in columns 40 through 43. Conical refuse burners must have stack data entered on the coding form. The entry is in feet, right justified, no blanks allowed.

COLUMN 55

CAUTION: this is an unassigned column. DO NOT USE; LEAVE BLANK.

POINTS WITH COMMON STACK, COLUMNS 56-59

Entries will be made if emission points discharge through a common stack. Enter four zeros if there is one emission point and one stack. First and most important is that the units in this combination MUST be numbered consecutively. Second, a form for each unit in the combination MUST be completed. For example, if Plant X has 15 emission points, three of which discharge through a common stack, 15 Point Source Input Forms would be completed. On three of these forms, as shown in Figure 3.1.2-f, enter identical stack height (columns 33-36), stack diameter (columns 37-39), and stack temperature (columns 40-43) data for the stack common to the three separate emission points. (Stack flow rate will be different on each of these three forms.) On each of these three forms, also enter the lowest and highest of the emission point ID numbers assigned to the emission point with a common stack. Let's say that of the 15 emission points in this plant, the three with a common stack are assigned numbers 04, 05, 06. On card 2 of the form for emission point 04, enter 04 in columns 14-15 and

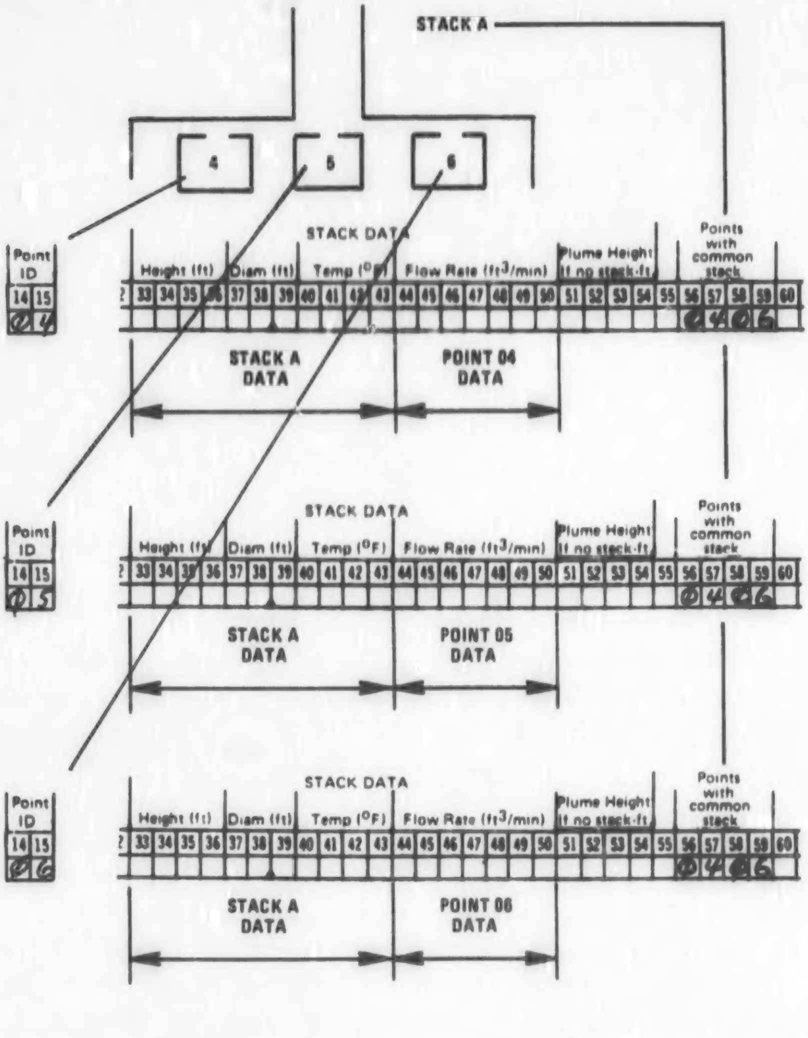

STACK A
4
5
6
Point ID
14 15
Ø4
Ø5
Ø6
STACK DATA
Height (ft)
Diam (ft)
Temp (°F)
Flow Rate (ft³/min)
Plume Height if no stack-ft
Points with common stack
32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
Ø4Ø6
STACK A DATA
POINT 04 DATA
POINT 05 DATA
POINT 06 DATA

Figure 3.1.2-f. Common stack data entries.

0406 in columns 56-59. When filling out the form for emission point 05, enter 05 in columns 14-15 and 0406 in columns 56-59. When filling out the form for emission point 06, enter 06 in columns 14-15 and 0406 in columns 56-59. The 0406 entry in spaces 56-59 indicates that three emission points discharge through the stack described in columns 33-50 (because 04 through 06 defines 3 numbers).

COLUMNS 60-77

These columns are not assigned. Leave blank; do not use.

ACTION CODES, COLUMNS 78-80

Columns 79 and 80 are preprinted to indicate point source and Card Two. An add code (A) in column 78 is used to add a new point to the file. A delete code (D) is used to delete a point. Use of a D in column 78 of Card Two deletes all the data for a point (i.e., all data on Cards 2-6). A change code (C) is used to change data for fields that are filled in. Enter data only for fields to be changed.

SUMMARY

Instructions for completing Card Two are summarized in Table 3.1.2-c and illustrated in Figure 3.1.2-g.

Table 3.1.2-c.

Summary of Instructions for Card Two[a]

Column	Data Source	L	R	Ø	B	Remarks
1-13	Card ONE		X	X	X	
14-15	Assigned by Survey Team		X	X	X	
16-17	Year of Record of the data entered on this card.		X	X	X	
18-21	Standard Industrial Classification Manual, 1972.		X	X	X	Principle Activity
22-23	AEROS Manual Vol. V.		X	X	X	
24-32	From U.S. Geological Survey Maps		X	X	X	Accuracy less than one kilometer.
33-36	Actual Stack Height in feet; estimates within 10 feet; if no stack, fill in zeros.		X			If none enter zero
37-39	Actual stack inside diameter in feet and 10ths; diameter equivalent = 1.128 $\sqrt{A}$ measured at discharge to atmosphere		X			
40-43	Temperature °F at discharge		X			
44-50	Use actual or design maximum ft^3/min					
51-54	A must entry if Height, Diameter, and Flow rate are zeros.		X			
55	Not assigned					
56-59	Point IDs MUST be numbered consecutively. Enter lowest in 56-57. Enter highest in 58-59. Enter zeros if not applicable.		X	X	X	
60-77	Not Assigned - DO NOT USE; LEAVE BLANK					
78	Action code A, C, or D				X	
79-80	Preprinted					

[a] L--left justify, R--right justify, Ø--zero fill, B--no blanks.

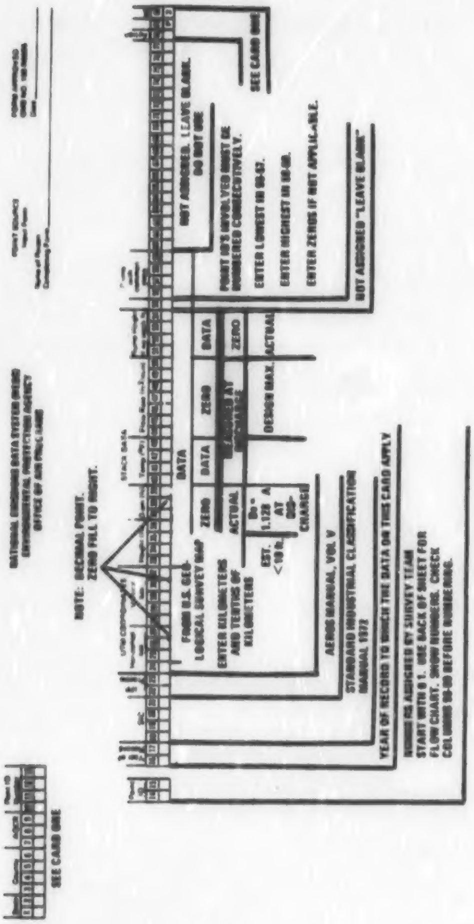

NOTE: DECIMAL POINT. ZERO FILL TO RIGHT.
SEE CARD ONE
NOT ASSIGNED. LEAVE BLANK. DO NOT USE
POINT ID'S INVOLVED MUST BE NUMBERED CONSECUTIVELY.
ENTER LOWEST IN 80-82.
ENTER HIGHEST IN 88-90.
ENTER ZEROS IF NOT APPLICABLE.
NOT ASSIGNED "LEAVE BLANK"
DATA
ZERO
ACTUAL
DESIGN MAX.
FROM U.S. GEOLOGICAL SURVEY MAP
ENTER KILOMETERS AND TENTHS OF KILOMETERS
AEROS MANUAL, VOL V
STANDARD INDUSTRIAL CLASSIFICATION MANUAL 1972
YEAR OF RECORD TO WHICH THE DATA ON THIS CARD APPLY
NUMBERS ASSIGNED BY SURVEY TEAM START WITH 0 1. USE BACK OF SHEET FOR FLOW CHART. SHOW NUMBERS. CHECK COLUMNS 90-90 BEFORE NUMBERING.

Figure 3.1.2-g. Card Two.

CARD THREE

The purpose of Card Three is to provide information on (1) boiler design capacity, (2) control equipment, and (3) estimated control efficiency.

COLUMNS 1-15

These columns were discussed in detail in the earlier discussions of Cards One and Two.

YEAR OF RECORD, COLUMNS 16-17

Enter the year of record that the data on Card Three represent. The entry is right justified, no blanks, zero fill.

BOILER DESIGN CAPACITY (10^6Btu/hr), COLUMNS 18-22

For reporting purposes, a boiler consists of a burner or burners, firebox, heat exchanger, and an exhaust system. Boiler design capacity is defined as the gross heating value of fuel input to a boiler at maximum design rate. Enter boiler capacity in millions of Btu per hour based on the maximum design capacity of the boiler. If this field is not applicable to the emission point being described, enter a zero in column 22.

The entry is right justified.

CONTROL EQUIPMENT, COLUMNS 23-52

This field is subdivided into 10 subfields - a primary and secondary field for each of the five pollutants. Engineering judgment must be used to ascertain whether a given control device significantly reduces the emissions of more than one pollutant.

PRIMARY CONTROL EQUIPMENT is any device whose main purpose is reducing emissions of a pollutant and is reported as a primary control using the codes listed in AEROS Manual, Volume V, Section 3.3.0. When none of the equipment codes appear to be applicable, choose the code that most nearly resembles the actual equipment and include a comment on card 6 or 7. Only control devices that reduce the uncontrolled emissions normally associated with the process should be reported. Do not report equipment that is a normal part of the source activity even though the quantity of the pollutants emitted may be reduced. For example, the recovery system for coke by-product gases of coke oven should not be reported as pollution control equipment for hydrocarbons.

SECONDARY CONTROL EQUIPMENT is a device following, in series, another device designed to remove the same pollutant. For example, a settling chamber (or gravity collector) for removing large particles is often followed by an electrostatic precipitator. The precipitator should be reported as secondary control equipment.

A device installed primarily for removal of one pollutant may also remove another pollutant. In this case the code for the control device would be entered as primary control equipment for the pollutant it is intended to remove and as secondary equipment for the pollutant which it incidentally removes. When this situation occurs, the control device would be entered in the secondary control field with a zero entered in the primary control field for the pollutant which is incidently removed.

In each subfield the appropriate code is entered or the field is left blank. For control equipment, enter the code. For no control equipment, zero fill. If status is unknown, leave blank. The entry is right justified.

ESTIMATED CONTROL EFFICIENTY (%), COLUMNS 53-67

The overall collection efficiencies, in percent by weight, of all control equipment at the emission point will be entered in this field for each of the five pollutants. Assume that the pollutant load entering the control equipment is the normal, uncontrolled quantity for that specific process. If removal efficiency for a particular pollutant is unknown, leave those three columns blank. If there is no effective removal, enter zeros in all columns. Typical control efficiencies are listed in APTD 1570, the NEDS Control Device Workbook.

The entry decimal point must correspond to the triangle in the field; zero fill, and leave no blanks. If efficiency is known, enter in spaces for applicable pollutant. If efficiency and control method are unknown, leave blank. The control efficiency field may be left blank only if the corresponding control equipment fields are also blank. Do not leave control efficiency blank if control equipment is indicated. Estimate pollutant control efficiency, if necessary, and indicate this as a comment for the point.

COLUMNS 68-77

Not assigned; leave blank.

ACTION CODES, COLUMNS 78-80

Columns 79 and 80 are preprinted to indicate point source and Card Three. Enter A or C in column 78 to indicate add or change. Do not use the delete code (D) on Card Three.

SUMMARY

Instructions for completing Card Three are summarized in Table 3.1.2-d and illustrated in Figure 3.1.2-h.

five pollutants. Assume that the pollutant load entering the control equipment is the normal, uncontrolled quantity for that specific process. If removal efficiency for a particular pollutant is unknown, leave those three columns blank. If there is no effective removal, enter zeros in all columns. Typical control efficiencies are listed in APTD 1570, the NEDS Control Device Workbook.

The entry decimal point must correspond to the triangle in the field; zero fill, and leave no blanks. If efficiency is known, enter in spaces for applicable pollutant. If efficiency and control method are unknown, leave blank. The control efficiency field may be left blank only if the corresponding control equipment fields are also blank. Do not leave control efficiency blank if control equipment is indicated. Estimate pollutant control efficiency, if necessary, and indicate this as a comment for the point.

COLUMNS 68-77

Not assigned; leave blank.

ACTION CODES, COLUMNS 78-80

Columns 79 and 80 are preprinted to indicate point source and Card Three. Enter A or C in column 78 to indicate add or change. Do not use the delete code (D) on Card Three.

SUMMARY

Instructions for completing Card Three are summarized in Table 3.1.2-d and illustrated in Figure 3.1.2-h.

Table 3.1.2-d.
Summary of Instructions for Card Three[a]

Column	Data	L	R	0	B	Remarks
1-13	Card One					
14-15	Card Two				X	
16-17	Year of record of the data entered on this card		X	X	X	>59, <80
18-22	Boiler Specification		X			10^6 Btu/hr
22-52	Enter Control Equip. Code; see AEROS Manual Vol. V; no Control Equip., enter a zero; status unknown, leave blank.		X			
53-67	Use APTD-1570 for efficiencies; known, enter; unknow device and efficiency, leave blank; estimate for unknown control devices		X			triangle the decimal point
68-77	Not assigned, leave blank					
78	Action codes A or C; do not use D				X	
79-80	Preprinted					

[a] L--left justify; R--right justify; 0--zero fill; B--no blanks.

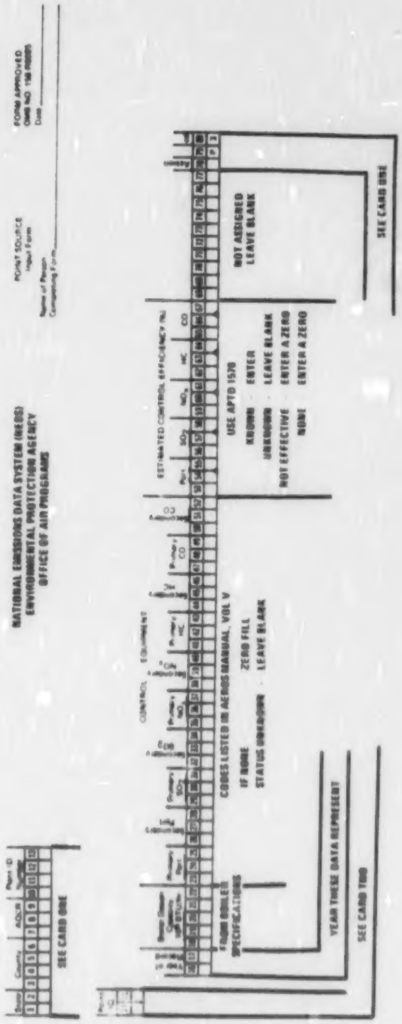

NATIONAL EMISSIONS DATA SYSTEM (NEDS)
ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF AIR PROGRAMS
POINT SOURCE
Input Form
Name of Person
Completing Form
FORM APPROVED
Date
State
County
AQCR
Plant ID
SEE CARD ONE
19
CONTROL EQUIPMENT
Primary
Secondary
Part.
SO_2
NO_x
HC
CO
ESTIMATED CONTROL EFFICIENCY (%)
FROM BOILER SPECIFICATIONS
CODES LISTED IN AEROS MANUAL, VOL V
IF NONE · ZERO FILL
STATUS UNKNOWN · LEAVE BLANK
USE APTD 1570
KNOWN · ENTER
UNKNOWN · LEAVE BLANK
NOT EFFECTIVE · ENTER A ZERO
NONE · ENTER A ZERO
NOT ASSIGNED
LEAVE BLANK
YEAR THESE DATA REPRESENT
SEE CARD TWO
SEE CARD ONE
3

Figure 3.1.2-h. Card Three.

CARD FOUR

The purpose of Card Four is to provide operating information and emission estimates. This information is required to determine the release of pollutants on a seasonal, monthly, or time-of-week basis. Such data are valuable to an enforcement agency in properly selecting an effective air pollution control strategy. It should be emphasized that this Card refers to activity of the point ID, not of the entire facility. For example, an industrial boiler in a plant may be operating 7 days a week even though the plant may be shut down on Saturdays and Sundays. If the source is operating at more than 25 percent of its normal rate, consider the source to be fully operating during that time period. If production is less than 25 percent of the normal rate, consider the source as not operational during that time period.

COLUMNS 1-15

These columns were discussed in detail in the previous sections for Cards One and Two.

YEAR OF RECORD, COLUMNS 16-17

Enter the year of record that the data on Card Four represent. The entry is right justified, no blanks, and zero filled.

ANNUAL THROUGHPUT (%), COLUMNS 18-25

This field is subdivided into four 3-month periods representing 12 months or one year. Enter in each period the activity, in percent for that period. Enter zeros for a period with no activity. If all activity occurs within one period, enter 99% for 100%.

The entries are right justified, no blanks, zero filled.

NORMAL OPERATING, COLUMNS 26-30

The hours per day, days per week, and weeks per year that the source operates under normal conditions should be entered here.

The entry is right justified, no blanks, zero filled.

EMISSION ESTIMATES, COLUMNS 31-65

This field is divided into five seven-column subfields, one for each pollutant. The data are obtained by one of four ways: (1) actual measurement, (2) material balance, (3) use of emission factors, and (4) guess. Emission estimates are the estimated total annual emissions for the Point ID. See the next section for further discussion and information.

The entry is right justified.

ESTIMATION METHOD, COLUMNS 66-70

The following codes describe the estimation method and apply for all five pollutants.

Code 0 Not applicable. Emissions are known to be zero. If a pollutant is not emitted by the source, enter a zero for the corresponding estimation method. Pollutants with zero as the estimation method must always have zero for the emission estimate. If the emission factor in SCC list is zero, then a zero must be entered as the estimation method.

Code 1 Emissions based on source testing or emission measurements. If test data are available, use these values to calculate the annual emissions. Take special care to use Code 1 only when reliable source test data are used to calculate annual emissions. When Code 1 is used, the corresponding emission estimates field must be filled in.

Code 2 Emissions based on material balance using engineering expertise and knowledge of process. Use Code 2 only when a material balance is performed. When Code 2 is used, the corresponding emission estimates field must be filled in.

Code 3 Emissions computer-calculated using emission factors in SCC listing. No emission estimates need be coded on NEDS form.

If an emission factor is NOT listed in the SCC list, then Code 3 CANNOT BE USED.

If an emission factor is listed in the SCC list, then Code 3 may be used and the estimated emissions field left blank. When this is done, the computer will automatically calculate emission estimates. When using Code 3, the annual operating rate (Card SIX), the estimated control efficiency (Card THREE), and the sulfur and ash contents for fuel combustion sources (Card SIX), MUST be entered.

Code 4 Emissions estimated by guess. Use Code 4 if an emission factor for a similar, but different, process is used to estimate the emissions. Code 4 should be used only after inspection of the SCC emission factor listing to ensure that no emission factor exists. When Code 4 is used, the corresponding emission estimates field must be filled in.

Code 5 Emissions calculated using a special emission factor differing from that in the SCC listing. If an emission factor (including any from AP-42) will yield a better emission estimate for the source than the factor in the SCC listing, the non-SCC factor to calculate an emission estimate should be used. When Code 5 is used, the corresponding emission estimates field must be filled in.

Code 6 New construction, not yet operational. Code 6 should be used for new sources during construction and not yet operational. No entries need to be made in the emission estimates field when Code 6 is entered in the estimation method field.

Code 7 Facility closed, operations ceased. Code 7 should be entered for processes ceasing operation. No entries need to be made in the emission estimates method field.

This code should be used rather than deleting the process from the data bank.

When multiple SCCs are coded for a point, it will be assumed that the same estimation method applies for all SCCs. Therefore, care should be taken to ensure that this is a reasonable assumption. Code the estimation method that is most appropriate, if it appears that different estimation methods would be applicable to different SCCs.

SPACE HEAT (%), COLUMNS 71-73

Enter the percent of fuel used for space heating. Note: the triangle is the decimal point. If the point ID is a process, enter a zero in column 73. If Card Six indicates that the point ID burns fuel, then the entry will not be zero.

COLUMNS 74-77

These columns are not assigned; leave blank.

ACTION CODES, COLUMNS 78-80

Columns 79 and 80 are preprinted to indicate point source and Card Four. Enter A or C in column 78 to indicate add or change. Do not use the delete code (D) on Card Four.

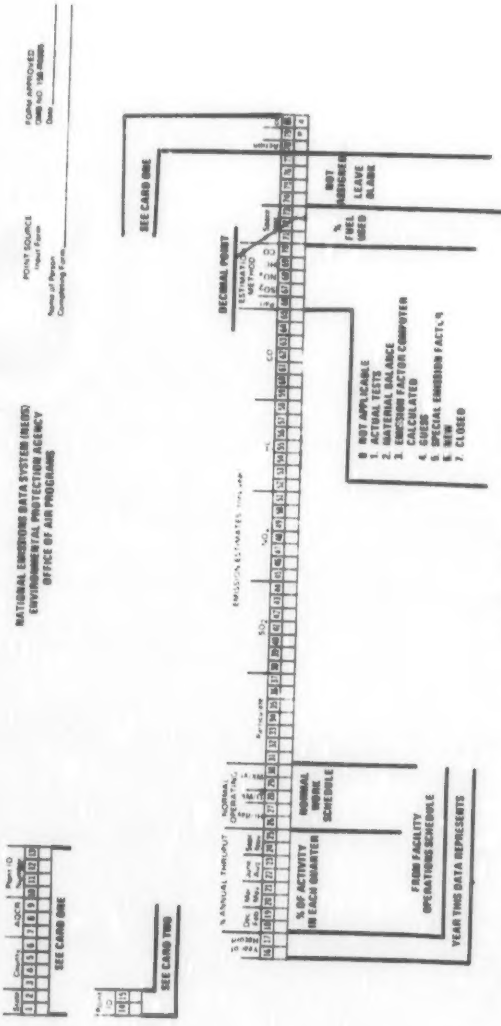
SUMMARY

The instructions for completing Card Four are summarized in Table 3.1.2-e and illustrated in Figure 3.1.2-i.

Table 3.1.2-e.
Summary of Instructions for Card Four[a]

Column	Data	L	R	Ø	B	Remarks
1-13	Card One.					
14-15	Card Two.				X	
15-17	Year of record of the data entered on this card.			X	X	
18-25	From operation schedule.		X	X	X	
26-30	From operation schedule.		X	X	X	
31-65	Emission estimates for five pollutants.		X			
66-70	Method of arriving at emission estimates.		X			
71-73	From plant drawings and specifications.					Triangle
74-77	Not assigned; leave blank.					
78	Action codes A or C; do not use D.				X	
79-80	Preprinted.					

[a] L - left justify; R - right justify; Ø - zero fill; B - no blanks.



NATIONAL EMISSIONS DATA SYSTEM (NEDS)
ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF AIR PROGRAMS
POINT SOURCE Input Form
Name of Person Completing Form
FORM APPROVED
Date
SEE CARD ONE
SEE CARD TWO
% ANNUAL THRUPUT
NORMAL OPERATING
EMISSION ESTIMATES
SO2
NOx
CO
DECIMAL POINT
ESTIMATION METHOD
% OF ACTIVITY IN EACH QUARTER
NORMAL WORK SCHEDULE
FROM FACILITY OPERATIONS SCHEDULE
YEAR THIS DATA REPRESENTS
0 NOT APPLICABLE
1. ACTUAL TESTS
2. MATERIAL BALANCE
3. EMISSION FACTOR COMPUTER CALCULATED
4. GUESS
5. SPECIAL EMISSION FACTOR
6. NEW
7. CLOSED
% FUEL USED
NOT ASSIGNED LEAVE BLANK
SEE CARD ONE

Figure 3.1.2-i. Card Four.

CARD FIVE

Card Five provides allowable emissions and compliance schedule data for the point. All entries must reflect the current legal requirements of the source to comply with the most stringent air pollution control regulations in effect.

COLUMNS 1-15

These columns were discussed in detail in the sections on Cards One and Two.

YEAR OF RECORD, COLUMNS 16-17

Enter the year of record that the data on Card Five represent. The entry is right justified, no blanks, zero filled.

ALLOWABLE EMISSIONS, COLUMNS 18-52

"Allowable emissions" is the maximum emission of each pollutant, in tons per year, that the source is legally allowed to discharge into the atmosphere under the most stringent of the following conditions:

1. Existing local, state, or Federal legislation.
2. Imminent legislation that will legally require the source to comply to a certain discharge limitation within the year of record specified in Columns 16 and 17.
3. Official agreements with air pollution control regulatory agencies whereby the source must reduce emissions to a given quantity per year of record specified in Columns 16 and 17.

For NEDS coding purposes, every point ID will adhere to one of the following cases:

Case 1, Applicable Regulations. Allowable emissions are calculated by the following steps:

1. The maximum design rate value (Card Six, columns 33-39) is entered on the "Process Weight, tons/hr" axis of Figure 3.1.2-j. Figure 3.1.2-k shows the entries on the coding form. Note: This value must be converted to tons per hour; some entries are in other units.

2. From Figure 3.1.2-j the "Allowable Emissions, lb/ton" axis, read the allowable emissions factor.

3. The allowable emissions in tons per year can now be calculated.

Allowable emissions from an indirect heat exchanger can be calculated by using the above procedure but with Figures 3.1.2-l and 3.1.2-m. When actual emissions are zero tons per year because emissions are small or well controlled (Card Four), calculate the allowable emissions and enter on Card Five.

When allowable emissions are less than 1.0, enter a right justified 1 (one) for the pollutant. If allowable emissions are unknown, leave the columns blank.

Case 2, No Applicable Regulations. If no regulation is applicable to a pollutant emitted by a point ID, then enter nines in the appropriate columns. See Figure 3.1.2-k for SO_2.

Case 3, Nonemitters of a Pollutant. For nonemitters, enter a zero for the pollutant. See Figure 3.1.2-k for NO_x.

Summary. The entry is right justified. Data are entered as follows:

Data (calculations)	Whole numbers
Nonemitters	0
No applicable regulations	9999999
Unknown	Leave blank

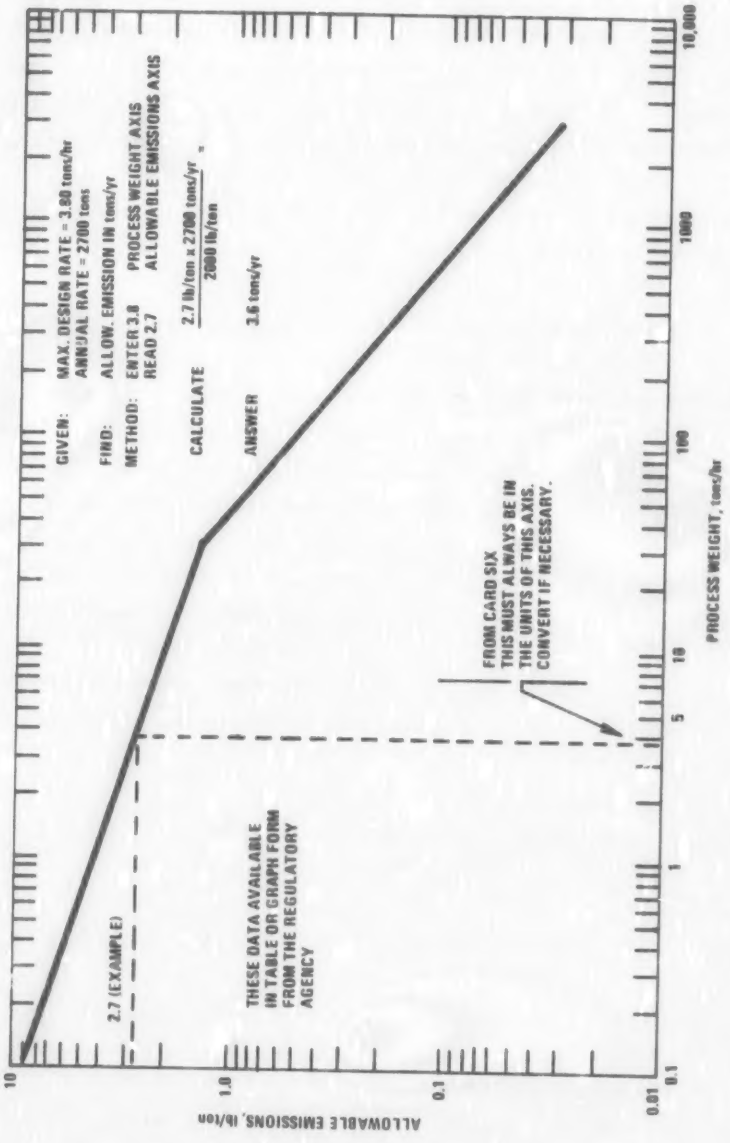


Figure 3.1.2-j. Example of allowable emission calculations.

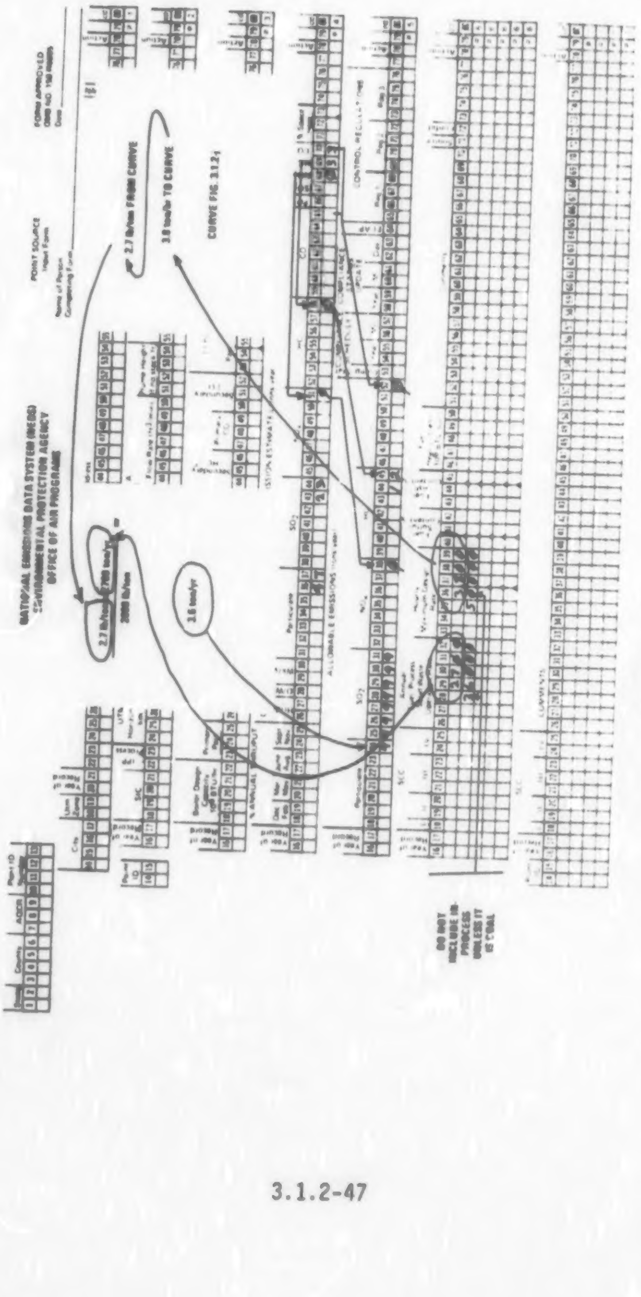


Figure 3.1.2-k. Example calculations and entries.

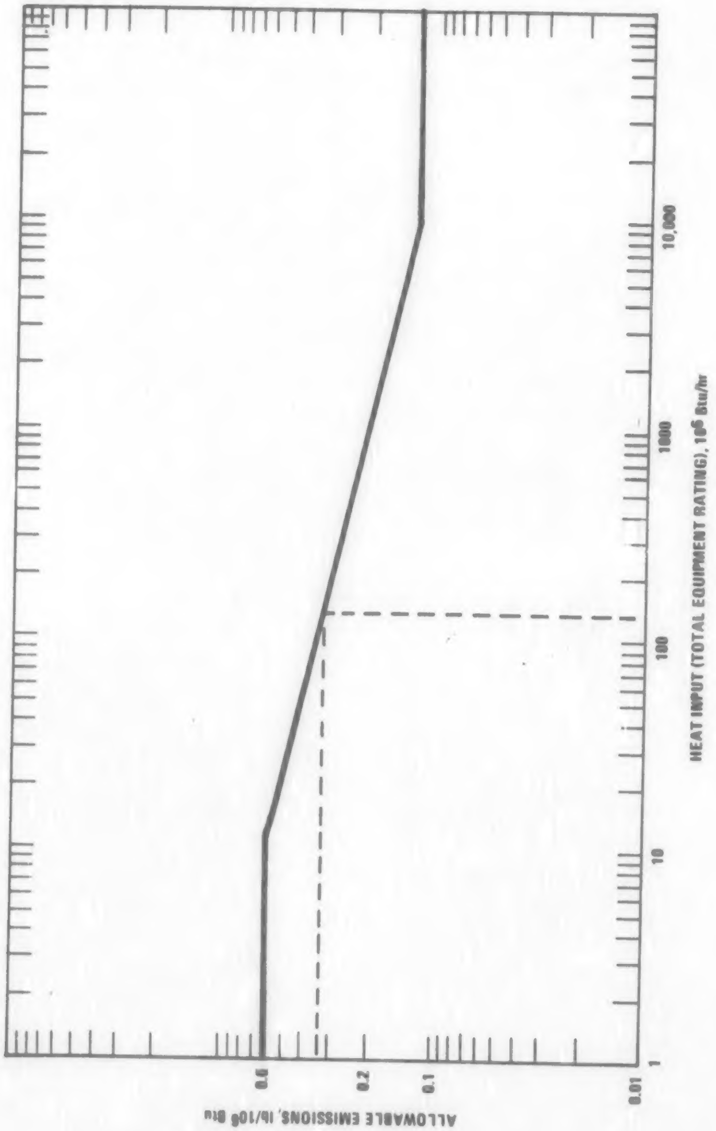


Figure 3.1.2-1. Example of indirect heating equipment.

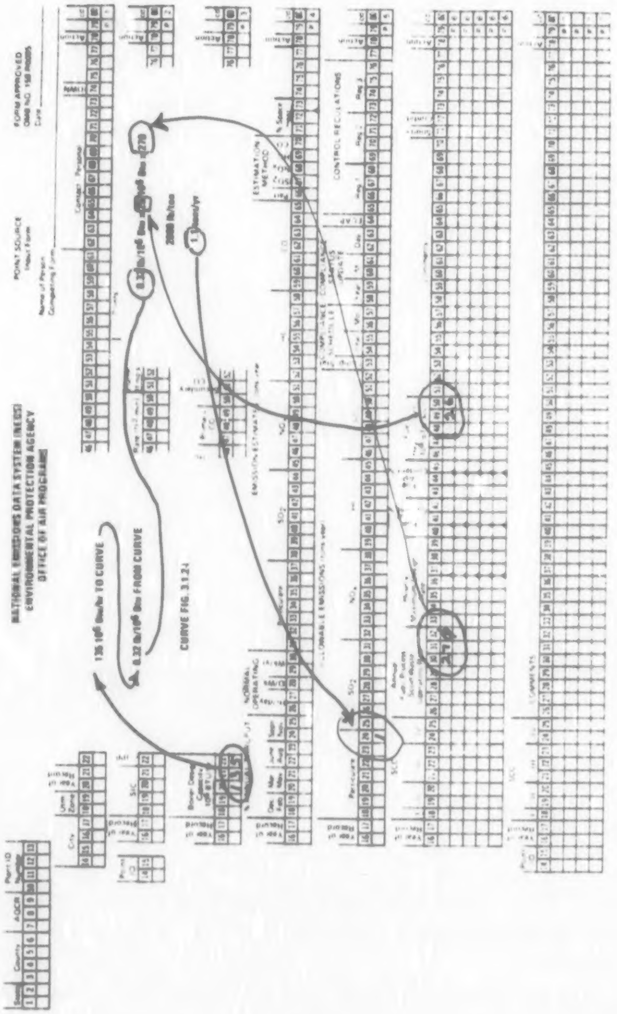

NATIONAL EMISSIONS DATA SYSTEM (NEDS)
ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF AIR PROGRAMS
POINT SOURCE
FORM APPROVED
135 10^6 Btu/hr TO CURVE
0.32 lb/10^6 Btu FROM CURVE
CURVE FIG. 3.1.2-i
2000 lb/ton
COMMENTS

Figure 3.1.2-m. Example calculations for indirect heating equipment.

COMP STAT, COLUMN 53

Air pollution control enforcement agencies often allow sources of air pollution an extended, but definite, period of time to design and install air pollution control equipment. This act of leniency is referred to as a "variance;" if the source succeeds in reducing its emissions as required, then the law has been satisfied and the source has met its pollution control obligation. One of the following codes must be selected to record the present status of the source under existing legal requirements:

Code	Description
1	Source is in compliance with the most stringent air pollution control requirements.
2	Source is not in compliance with existing legislation and no variance has been given. (Complete columns 54 through 57 on Card Five.)
3	Source is not in compliance with existing legislation but a variance has been given. (Complete columns 54 through 57 on Card Five.)
4	Compliance status is unknown.

COMPLIANCE SCHEDULE, COLUMNS 54-57.

If the point ID is not in compliance with existing legislation for the year of record enter the year and month the point ID must be in compliance.

If column 53 has code 2 or 3, an entry is required. If column 53 has code 1 or 4, leave blank. If status unknown, leave blank.

The entry is right justified and zero filled.

COMPLIANCE STATUS UPDATE, COLUMNS 58-63

If column 53 has code 4, leave blank. If column 53 has code 1, enter date legislation or regulation was enacted. If column 53 has code 2 or 3, enter most recent date of change in compliance status.

The entry is right justified and zero filled.

ECAP, COLUMN 64

Certain point sources are required to submit to government agencies an Emergency Control Action Program (ECAP) that specifies a detailed plan for immediately reducing emissions whenever air pollution in an area is considered an emergency condition. The following codes shall be used:

Code	Description
0	ECAP is not required.
1	ECAP is required, but has not been submitted.
2	ECAP has been submitted.
Blank	Status unknown.

CONTROL REGULATIONS, COLUMNS 65-76

Not currently being used; leave blank.

COLUMN 77

Not assigned. Leave blank; do not use.

ACTION CODES, COLUMNS 78-80

Columns 79 and 80 are preprinted to indicate point source and Card Five. Use A in column 78 if new data are being added for a point (complete set of cards 2-6). Use C to change existing data on this card. The delete code (D) must not be used for this card.

SUMMARY

Instructions for Card Five are summarized in Table 3.1.2-f and illustrated in Figure 3.1.2-n.

Table 3.1.2-f. Summary of Instructions for Card Five[a]

Column	Data		L	R	0	B	Remarks
1-13	Card One					X	
14-15	Card Two					X	
16-17	Year of record of the data entered on this card			X	X	X	>59, <80
18-52	Calculate allowable emissions			X			
53	Compliance Status			X			
	Codes 1 compliance			X	X		
	2 noncompliance w/o variance						
	3 noncompliance w variance						
	4 unknown						
	If Col. 53 is	The entry is					
54-57	2 or 3	required					
	1 or 4	leave blank					
	unknown	leave blank					
58-63	4	leave blank		X	X		
	1	date of regulation					
	2 or 3	recent change of compliance status					
64	ECAP						
	0 not required						
	1 required, not submitted						
	2 required and submitted						
65-76	Not currently being used; leave blank						
77	Not assigned; leave blank						
78	Action codes A or C; do not use D					X	
79-80	Preprinted						

[a] L - left justify; R - right justify; 0 - zero fill; B - no blanks.

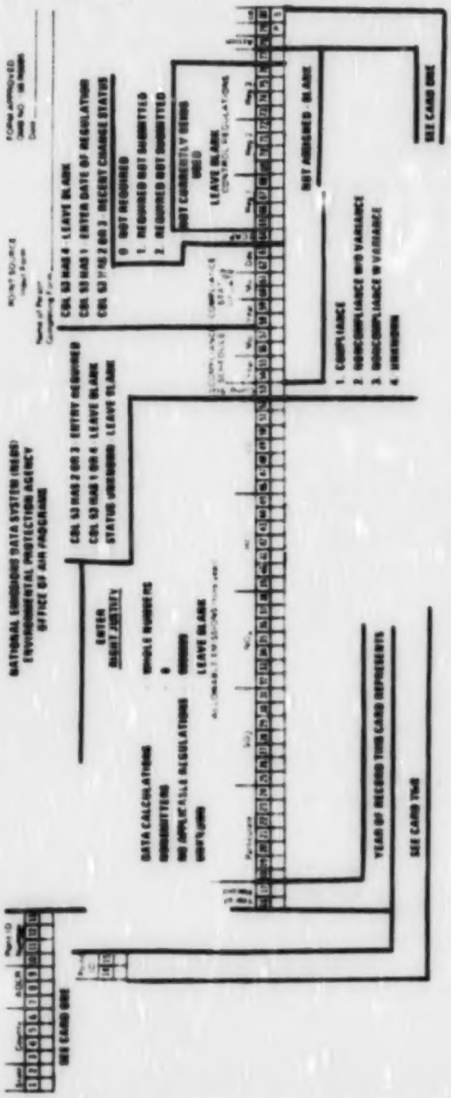


Figure 3.1.2-n. Card Five.

CARD SIX

The purpose of Card Six is to provide the operating characteristics of the source, including data on processes, fuel, and solid waste. Each horizontal row in the Card Six area of the form represents a separate Card Six. There must be one Card Six for each point. It may require more (several) than one Card Six to completely describe the point.

COLUMNS 1-15

These columns were discussed in detail in the sections describing Cards One and Two.

YEAR OF RECORD, COLUMNS 16-17

Enter the year of record that the data on Card Six represent. The entry is right justified, with no blanks, and zero filled.

SCC, COLUMNS 18-25

The Source Classification Code (SCC) identifies the type combustion or process. The code (see AEROS Manual, Volume V, Section 3.7.0) is an eight-digit number divided into four categories or levels (I, II, III, IV) to assist in determining and entering the correct process definition.

A form applies to only one point, and one or more SCC's may be required to describe the point. At least one SCC must be entered per NEDS form. For example, three small boilers each burn natural gas and distillate fuel oil. If they are combined on one coding form, the resulting form would show one SCC for a natural gas boiler and one SCC for a distillate oil boiler. The consumption of each fuel is totaled for the three boilers and entered next to the appropriate SCC. The total of the design capacities of all three boilers was entered on Card Three, and representative stack data were selected and entered on Card Two.

If an in-process fuel is used, list the appropriate SCC on a separate Card Six for the same point. An SCC may be used ONLY ONCE for a given point. Use the most appropriate SCC that best describes the process. However, do not try to 'shoe-horn' a process into an SCC.

If the most appropriate SCC description appears to be significantly different from the actual process, use the existing SCC codes ending in 99/999/99, 999/99, or 99 and include a brief, intelligible description of the process in the "comments" section. Use only the "comments" field available on the card. If there is a need for creation of a new SCC--one which specifically describes the process--this request can be made through the EPA Regional Office.

A maximum of ten SCC's may be coded for a single point. Only in very unusual circumstances should more than three or four SCCs for a single point be required.

The entry is right justified, no blanks.

FUEL, PROCESS, SOLID WASTE OPERATING RATE, COLUMNS 26-32

The SCC list prescribes the units to be used for each SCC. The average annual operating rates are entered in these units. Thus, for coal combustion, the process rate is expressed in tons of coal burned per year, whereas, when oil is burned, the units are thousands of gallons burned per year.

The entry is right justified.

MAXIMUM DESIGN RATE, COLUMNS 33-39

The maximum design rate units are the same as above, for the SCC, except expressed as an hourly rate.

The entry is right justified. Observe the decimal point (triangle) and zero fill.

FUEL SULFUR CONTENT (%), COLUMNS 40-42; ASH CONTENT (%), COLUMNS 43-45

The data entered should be sulfur or ash content on a weight percent basis.

If:	Combustion	Entry required
	No combustion	Zero (Col. 42 & 45)
	Content unknown	Leave blank
	Solid waste	Zero fill EXCEPT for high or unusual sulfur content

The entry is right justified. Observe the decimal point (triangle) and zero fill.

HEAT CONTENT 10^6 Btu/SCC, COLUMNS 46-50

The entry should reflect the gross or higher heating value of fuels consumed.

If:	Combustion	Entry required
	No combustion	Zero in Col. 50
	Solid waste	Zero in Col. 50

The entry is right justified.

COMMENTS, COLUMNS 51-70

The operating characteristics of most sources are defined by an SCC and associated data on one Card Six; therefore, only the "comments" field (columns 51 through 70) of one line of one Card Six is available for each SCC.

Comments must relate to the corresponding SCC. When the SCC is general (e.g., ending in 99), a description of the process is entered. Abbreviated comments must be intelligible. Useful notes pertaining to the source should be written on the back of the coding form for use of the agency retaining the original copies.

SOURCE, COLUMN 71

This code allows a quick visual classification of the point. Source codes that correspond to each of the SCC codes for the point are entered.

Code	Description of Source
B	Boiler
P	Process
C	Other combustion unit
S	Solid waste

CONFID, COLUMN 72

Process information occasionally is collected by a government agency under a guarantee that the data will be treated in a confidential manner and will not be released to the public. ("Emissions" can not be confidential according to the Clean Air Act.) This column specifies whether or not any data on the form are considered confidential. Data may be declared confidential by (1) the owners of the facility, or (2) by an official ruling made by the Office of General Council or the Regional Council.

Use the following to select the appropriate code.

Code	Description
1	Some data are considered confidential by submitting agency
2	No information is confidential
3	Source data are confidential by offical ruling of EPA legal counsel

One of the above codes must be used; this field must not be left blank.

COLUMNS 73-77

Not assigned. Leave blank; do not use.

ACTION CODES, COLUMNS 78-80

Column 79 is preprinted P to indicate point source; column 80, if not preprinted, should be coded 6 to indicate Card Six. In column 78, use the add code (A) if adding a new point or SCC. Use the delete code (D) to delete an existing SCC. Use the change code (C) to change data for a field or fields on Card Six. The SCC is an identifier and cannot be changed using the C code. If an SCC is incorrect and should be changed, the incorrect SCC must be deleted and the correct SCC then added with the appropriate complete set of data on Card Six.

SUMMARY

Instructions for Card Six are summarized in Table 3.1.2-g and illustrated in Figure 3.1.2-o.

Table 3.1.2-g.
Summary of Instructions for Card Six[a]

Column	Data	L	R	0	B	Remarks
1-13	Card One				X	
14-15	Card Two				X	
16-17	Year of record of the data entered on this card		X	X	X	>59 ,<80
18-25	SCC listing, AEROS Man., Vol. V. SCC used ONLY ONCE per Point ID. Use as many as needed to completely describe point .		X		X	
26-32	Use units listed for SCC (annual rate)		X			
33-39	Use units listed for SCC (hourly rate)					Decimal point
40-45	Combustion - Entry required No combustion - Zero in 42 and 45 Content unknown - Leave blank Solid waste - Zero fill EXCEPT high sulfur content					Decimal point
46-50	Combustion - Entry required No combustion - Zero Solid waste - Zero		X			
51-70	One line per SCC, use common abbreviations		X			
71	Boiler B Process P Other combustion C Solid waste S		X		X	
72	Determined by owner or EPA legal counsel				X	
78	Action code A,C, or D				X	
79	Preprinted					
80	6				X	

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[a] L - left justify; R - right justify; 0 - zero fill; B - no blanks.

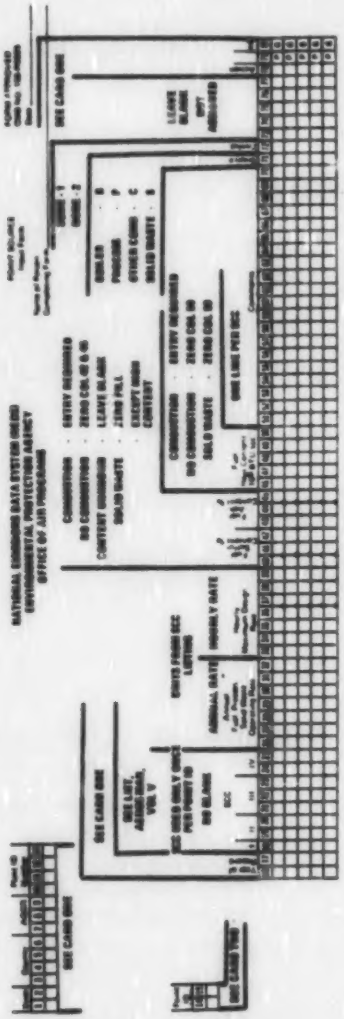

NATIONAL EMISSIONS DATA SYSTEM (NEDS)
ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF AIR PROGRAMS
SEE CARD ONE
BOILER
PROCESS
OTHER COMB
SOLID WASTE
ANNUAL DATA
HOURLY DATA

Figure 3.1.2-o. Card Six.

CARD SEVEN

The purpose of Card Seven (Figure 3.1.2-p) is to provide space for comments.

COLUMNS 1-15

These columns were discussed in detail in the sections describing Cards One and Two.

YEAR OF RECORD, COLUMNS 16-17

Enter the year of record that the data on Card Seven represent.

COLUMNS 18-25

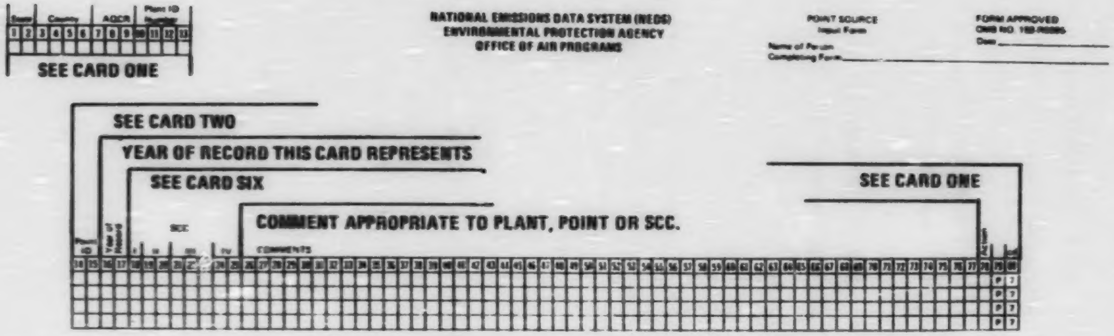
See discussion under Card Six.

COMMENTS, COLUMNS 26-77

Card Seven is provided to make room for additional comments. The usable space is columns 26-77, or 52 columns. There are three kinds (uses) of Card Seven. Their use and designation are as follows:

Plant Card Seven. This card is used for additional comments applying to the entire plant or facility. It is identified by leaving Point ID field columns 14-15 and the SCC field columns 18-25 blank. All other columns, except comment field columns 26-77, should be filled out as per previous instructions. Only ONE Plant Card Seven is allowed per Plant ID.

Point Card Seven. This card is used for additional comments applying to a Point ID. It is identified by leaving the SCC columns 18-25 blank. All other



State		County				AQCR			Plant ID Number			
1	2	3	4	5	6	7	8	9	10	11	12	13

SEE CARD ONE

NATIONAL EMISSIONS DATA SYSTEM (NEDS)
ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF AIR PROGRAMS

POINT SOURCE
Input Form

Name of Person
Completing Form

FORM APPROVED
OMB NO. 158-R0095
Date

SEE CARD TWO

YEAR OF RECORD THIS CARD REPRESENTS

SEE CARD SIX

COMMENT APPROPRIATE TO PLANT, POINT OR SCC.

SEE CARD ONE

Figure 3.1.2-p. Card Seven.

columns, except comment field columns 26-77, should be filled out as per previous instructions. Only ONE Point Card Seven is allowed per Point ID.

SCC Card Seven. This card is used for additional comments applying to an SCC. It is identified by completing the Plant ID, Point ID field columns 14-15, and the SCC field columns 18-25 (NO BLANKS). All other columns, except comment field columns 26-77, should be filled out as per previous instructions. Only ONE SCC Card Seven is allowed per SCC used per Point ID.

A state agency may format columns 26 through 77 for their own use on a Card Seven. This modified card will still be one of the three kinds mentioned above.

ACTION CODES, COLUMNS 78-80

The add code (A) must be used in column 78 if a Card Seven is being added with a new plant, point, or SCC not currently in the file. To add or change comments for a plant, point, or SCC already on the file, code C must be used. The delete code (D) must not be used for Card Seven.

With Card Seven, a special provision is made to change the Comments field to a blank. If a Card Seven is submitted with a C in column 78 and the comments field blank, the appropriate comment (plant, point, or SCC level) will be made blank on the file. This procedure may be used to remove unwanted comments from the file without having to make new comments.

SUMMARY OF POINT SOURCE DATA SUBMITTAL REQUIREMENTS

The following figures illustrate minimum requirements for completion of data fields on the NEDS point source form. For any transaction to add a new record to the file (card column 78 coded with an A) a complete set of at least one each of cards 1-6 must be submitted. Additional sets of cards 2-6 may be submitted for additional points at a plant. At least one, but no more than ten SCC's (card 6's) may be submitted for each emission point.

To change data currently on the file (card column 78 coded with a C) any individual card may be submitted. To change a specific data field the changed value is coded in the appropriate field and fields for which no changes are intended are left blank.

To delete a record from the file card column 78 for the appropriate card is filled in with a D. To delete an entire plant, fill out a delete card one. To delete a point fill out a delete card 2. To delete an SCC, fill out a delete card 6. Cards 3, 4, 5 and 7 must not be filled out for a delete transaction.

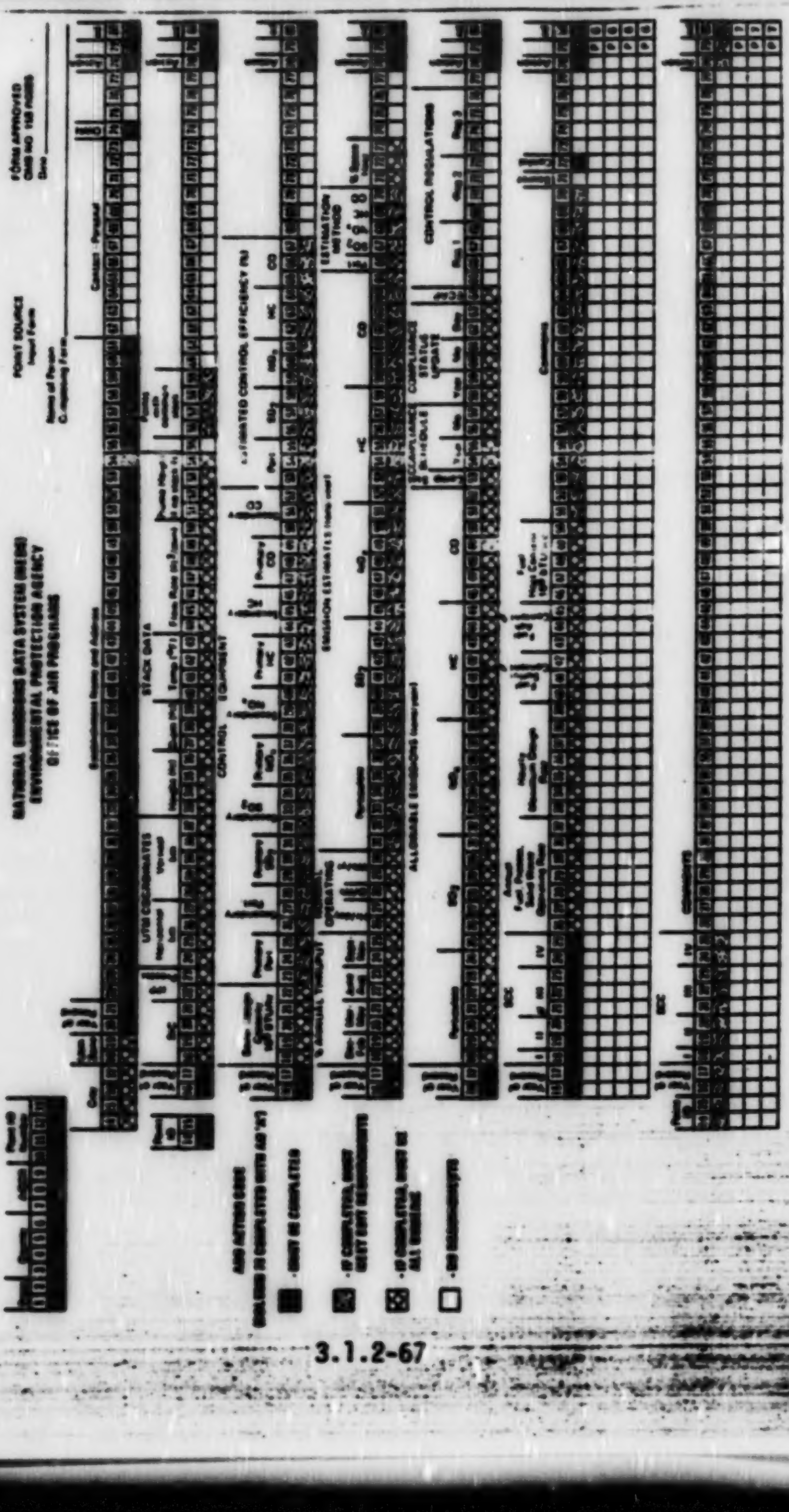
Card 7 is optional for any add or change transaction. Card 7 is never required, but may be used for additional comments capability if desired.

The key to reading the following figures is:

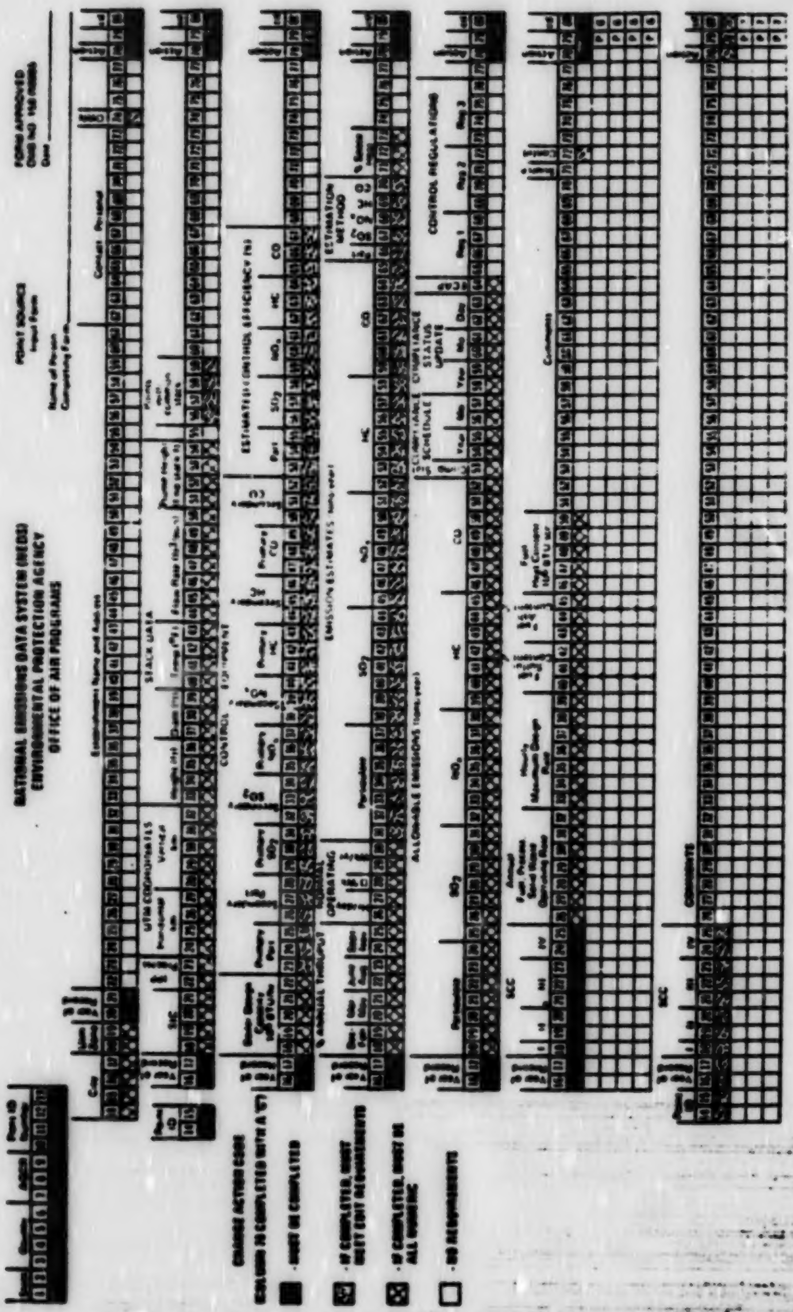
■ - These fields must be completed for any NEDS record that is submitted. If any of these fields are left blank, the record will be rejected in the edit process. NEDS edit checks also require that correct entries must be made in certain fields. See section 7.2.1 for a complete list of NEDS edit checks.

▨ - If these fields are left entirely blank, the record submitted will be accepted. However, any entries made in these fields will be screened to see that they meet edit criteria as specified in section 7.2.1. Records failing to meet any of these criteria will be rejected.

▩ - The only requirements for these fields are that they must be all numeric or all blank. If any alphabetic characters or embedded blanks appear, the record will be rejected.



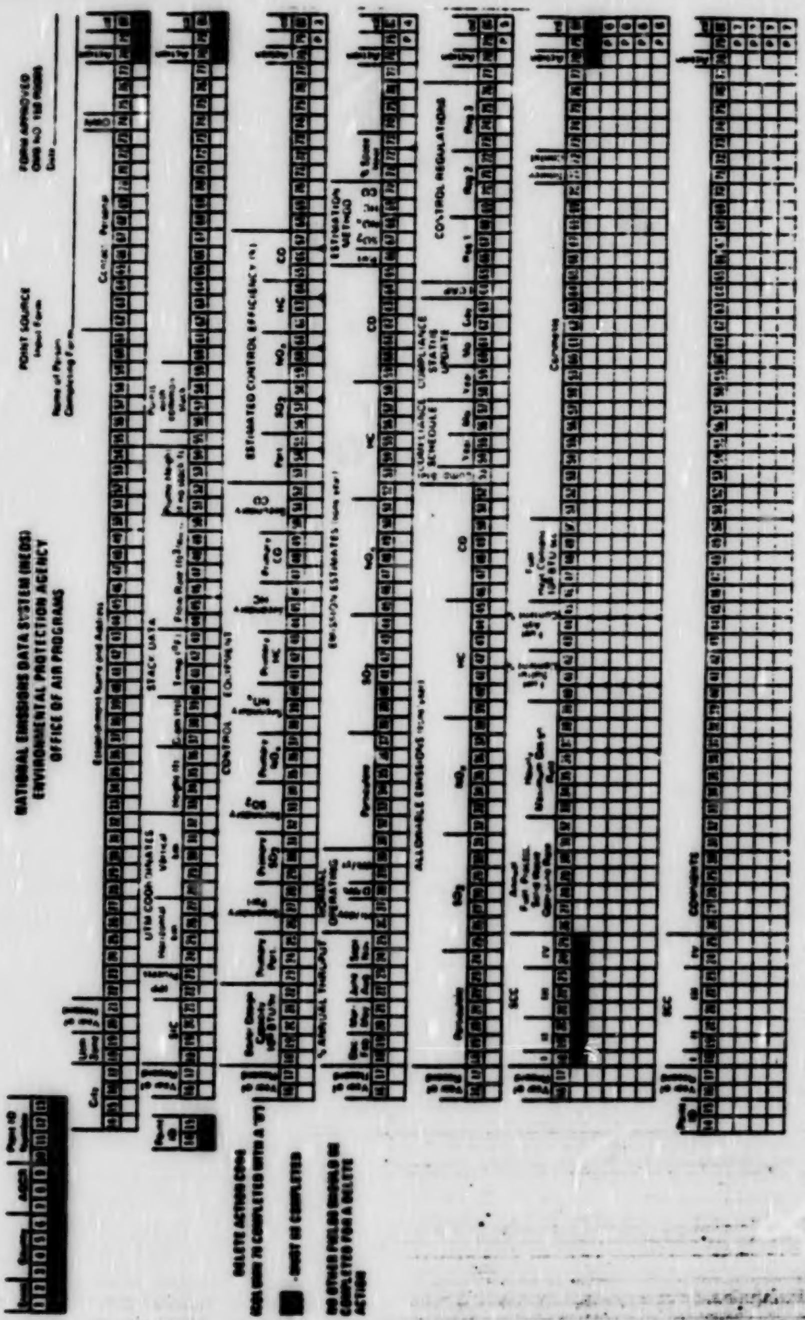
Reproduced from best available copy.



NATIONAL EMISSIONS DATA SYSTEM (NEDS)
ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF AIR PROGRAMS

POINT SOURCE
Input Form

STACK DATA
CONTROL EQUIPMENT
EMISSION ESTIMATES
ESTIMATION METHOD
ALLOWABLE EMISSIONS
COMPLIANCE STATUS UPDATE
CONTROL REGULATIONS
SCC
Comments
Part
SO2
NOx
HC
CO



NATIONAL EMISSIONS DATA SYSTEM (NEDS)
ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF AIR PROGRAMS

POINT SOURCE

SPECIAL CASES, PROCEDURES, OR INSTRUCTIONS

In this section are special cases, procedures, instructions, etc., that could not be properly placed in some previous section. Most items in this section will involve two or more of the previous sections.

PROCEDURE FOR CHANGES IN LOCATION OF STATIONARY SOURCES

There are some sources in NEDS that are legitimate stationary point sources but may be physically moved from time to time. A specific example of such a source classification in which this may occur is asphaltic concrete batch plants. As a "job" is completed, often these plants are moved to a new site and emissions are "relocated." To ensure treatment and to enable these sources to be accurately reflected and identified, the procedure defined below should be followed.

To handle such semimobile point sources, a special county code number has been developed. This code number is 9900. Use of this code number shall be only for those point sources which are subject to being moved from time to time. Normal stationary sources must not be coded with this code.

In order to properly code the data for these semimobile point sources, the following procedures should be followed:

1. Code state ID as normal to indicate the state where the facility is locate
2. Code 9900 as the county ID.
3. Code the AQCR number for the AQCR in which the facility is normally located. If the facility moves from one AQCR to another, code the AQCR number in which the facility is most frequently located or the AQCR which is the most probable location for the facility at any given ti

4. Assign a plant ID number which is unique within the county code -- 9900.

5. For the establishment name and address give company name and mailing address of person to contact for information about the facility.

6. Leave UTM coordinates fields blank unless it is desired to record new coordinates whenever the plant moves.

7. Enter remaining information as would normally be done for any other source. When any source data changes, submit a change transaction (C in column 78) as would be done for any other source.

8. It is desirable to include a plant level comment to verbally identify the last specific location of the facility. If the plant moves several times during a given semiannual reporting period, note this information if possible.

CODING OF DUAL-IDENTITY CONTROL DEVICES

Several gaseous control methods used with NEDS are unique in that they function both as control equipment and as individual source categories, distinct from the process(es) they are controlling. When coding NEDS point sources to which such devices/methods are applied the following procedure must be used:

1. On the point source form for the process(es) being controlled, enter the appropriate three-digit device code on Card Three, control efficiencies, and estimated controlled emissions;

2. Complete one or more separate Card Sixes for the control device itself, listing the same kinds of information, including its SCC Number (see partial list below) and estimated emissions after the pollutant stream passes through the device.

The following list indicates most of the devices to which the above instructions apply:

Device/method	SCC number	Control device ID
1. Sulfuric acid plant--contact process	301-023-01 to 301-023-18 (depending on SO_2 conversion)	043
2. Sulfuric acid plant--double contact process	301-023-01 to 301-022-18 (depending on SO_2 conversion)	044
3. Direct flame afterburner with heat exchanger (e.g., CO boiler)	390-007-99	022
4. Catalytic afterburner with heat exchanger	390-007-99	020
5. Flaring	301-900-99	023

Examples of applications of these devices are the techniques used to control carbon monoxide from blast furnaces and basic oxygen furnaces, used in iron and steel manufacturing, and from moving- and fluid-bed catalytic cracking units, used with petroleum refinery operations. Table 3.1.2-h provides information on the processes, control methods, and emission factors.

Unless otherwise noted, all blast furnace and basic oxygen furnace CO emissions should be assumed to be controlled, as general practice, by control devices ID 022 or 023. The uncontrolled emission factor in the NEDS SCC emission factor file will then be used, reduced by the appropriate control efficiency, thus becoming a controlled emission estimate. However, fluid and moving bed cracking units can normally be assumed to be uncontrolled, if no other information on specific devices is provided.

In both cases the person completing the forms or recording the information must be alert to the fact that the operators of such a plant may or may not consider these uses of the "off gasses" to be a control device.

Table 3.1.2-h. EMISSION FACTORS FOR DUAL IDENTITY CONTROL DEVICES

Process application (SCC)	Control Method Name/ID/SCC	Emission factors		Control efficiency
		Uncontrolled	Controlled	
1. Pig iron blast furnace (303-008-01)	CO boiler/022/390-007-99	1,750 lb/ton product	≤1.75 lb/ton product	99.9^+
2. Basic oxygen steel furnace (303-009-03)	Flaring/023/301-900-99	139 lb/ton product	1.5 lb/ton product	99.0
3. Fluid catalytic cracking unit (306-002-01)	CO boiler/022/390-007-99	13,700 lb/10^3bbl feed	≤13.7 lb/10^3bbl feed	99.9^+
4. Moving bed catalytic cracking unit (306-003-01)	CO boiler/022/390-007-99	3,800 lb/10^3bbl feed	≤3.8 lb/10^3bbl feed	99.9^+

Procedures and Methodology for the Addition to and/or Revision of the NEDS Source Classification Codes (SCC's)

Because of the ongoing inclusions of new and/or redefined source categories in NEDS, and due to the continued modification and formulation of emission factors, it is periodically necessary to revise the NEDS Source Classification Code Listing. Several guidelines are hereby promulgated to delineate areas where SCC additions and revisions may be implemented.

A. Guidelines for SCC Additions and Expansions

1. SCC's may be added in the following cases:
    a. when new emission categories are incorporated into AP-42, Compilation of Air Pollutant Emission Factors, for which no existing SCC's are applicable.
    b. for existing emission categories for which none of the present SCC's are applicable. These are now included in catchall "other/not classified" SCC's which are characterized by 99's contained therein.
    c. to account for the use of in-process fuels where such a consideration has not already been made.
    d. to make NEDS compatible with other data systems (e.g., the Compliance Data System (CDS) or the Hazardous and Trace Substances Emission System (HATREMS)).
2. SCC's may be expanded when a more sophisticated determination of emission factors for a process appears plausible. This may be done when:
    a. emission factors can be defined as a function of the type of process throughput:
        e.g., separate SCC's may be defined for cotton gins

should be pointed out to those involved in future coding efforts that, whenever possible, the expanded SCC's should be used. Most processes in NEDS should eventually be coded with these expanded SCC's as they become available.

In all cases, engineering judgment must be used in determining which expansions are realistic and necessary. While many expansions which meet the above criteria are conceivable, as a general rule only those for which significantly different emission factors are known should be added at a given time. By limiting the entry of expanded SCC's in this manner, the SCC listing can be kept at a reasonable length while still accommodating more sophisticated emission factor information as it becomes available.

B. Procedure for Requesting Source Classification Code Modifications

1. When it appears that new or additional SCC's for a process are needed, anyone may initiate said action by completing an SCC Initiation Form as shown in Figure 3.1.3-a. He should then send it to NADB for determination if the addition/change is, in fact, necessary in light of above criteria.
2. If, after detailed review, the addition/change is deemed necessary, NADB will then enter the addition/change into the proper NEDS utility files.
3. Printouts of the modified SCC Listing will be made available to the AEROS community on a regular basis, as is determined necessary.

SCC INITIATION FORM

INITIATOR__________

AGENCY__________

PROPOSED SCC CATEGORY

SCC CATEGORY I NAME__________

SCC CATEGORY II NAME__________

SCC CATEGORY III NAME__________

SCC CATEGORY IV NAME__________

UNITS

PROPOSED EMISSION FACTORS - OPTIONAL - Provide detailed background data if completed

	NADB use only	NADB use only
PART__________	V__________	F__________
SO_2__________	V__________	F__________
NO_2__________	V__________	F__________
HC__________	V__________	F__________
CO__________	V__________	F__________
OTHER__________		

REASON FOR PROPOSED SCC (Use back of page if necessary)

NATIONAL AIR DATA BRANCH REVIEWER__________

CONCURRANCE

YES_____ DATE__________

NO_____

COMMENT

SEND TO:

National Air Data Branch (MD-14)
Environmental Protection Agency
Research Triangle Park, North Carolina 27711
ATTN: Chief, Request and Information Section
Note: Use one Form Per Proposed SCC.

Figure 3.1.3-a. SCC Initiation Form.

INTRODUCTION

The Emission Factor Section, National Air Data Branch (NADB), has been charged with the responsibility of collecting, analyzing, and storing emission information. To permit more accurate predictions of the effects of various process characteristics on the kinds and amounts of air pollutant emissions, properly qualified and quantified source test data are required.

To achieve this objective, the Source Test Data subsystem (SOTDAT) has been developed. It provides a practical means for the storage, retrieval, and analysis of source test data and related pertinent information. These test data will be obtained from the more reliable sources, such as the EPA Emissions Measurement Branch test reports, State and local air pollution control agencies, control equipment manufacturers, engineering consultants, and installations identified through information retrieved from the National Emissions Data System (NEDS) point source file.

Once source test runs have been coded and the coded forms, along with the source test report, have been submitted to NADB, they will be carefully scrutinized for accuracy, duplication of results, completeness, etc., by in-house personnel. The data will then be keypunched, verified, and stored in the SOTDAT system, where they can be accessed by OAQPS and EPA Regional Office personnel on a time-sharing basis.

It is expected that this information will be very helpful to any personnel interested in:

1. Development of accurate emission factors:

   For each source category, the stored emission and process parameter data can be related, through empirical models, to permit the more accurate prediction of emission factors.

2. Technical evaluation of control equipment:

   Information stored on their operating parameters (inlet and outlet stream temperatures, inlet stream particle size distributions, collection efficiencies) can allow one to evaluate the overall performance of a type of control equipment as it is applied to a specific source category (e.g., baghouses controlling lead smelter blast furnaces).

3. Prediction of control method costs:

The same equipment operating parameters, when coupled with NEDS point source information, can be used to estimate fixed and variable costs of control methods for any (or all) of the source categories on file. For example, knowledge of the design throughput and pressure drop of a venturi scrubber (in actual m^3/sec) applied to a basic oxygen steelmaking furnace, can enable one to estimate its purchase, installation, and operating costs at any similar installation on file.

4. Coordination of enforcement and surveillance activities:

SOTDAT can also supplement the compliance information now available through NEDS to Headquarters and Regional Office Enforcement and Surveillance personnel. For example, detailed surveillance source test information can be stored and accessed when and as needed. In addition, the enforcement personnel may use it as a routine survey tool to suit their purposes.

5. Performance of source tests:

Personnel planning source tests can access the SOTDAT systems to see if similar tests have been performed. They can then contact the performing agency prior to doing their tests to get advice and identify potential problem areas. They can also compare the results with their results as a quality control technique.

So far, several groups within EPA have shown a keen interest in both contributing to and drawing information from SOTDAT. As the system's data base develops, more user features will become evident, and it is predicted that many more EPA and non-EPA personnel will need to access it. Concurrently, the data storage format will be continuously reviewed to suit these ever-changing needs and requirements.

The rest of this procedure contains instructions to follow when entering source test data on SOTDAT coding forms.

GENERAL INSTRUCTIONS

The following pages contain information on the data fields--name, number, length and type, and description--which must be carefully read and the procedures followed to correctly code the forms. One SOTDAT data form (Figure 3.3.1-a) is to be filled out for each run of a stack test performed at an installation. If the amount of information to be recorded in a given field exceeds the space allotted on that one form, enter the additional data in the appropriate field on a second form, list the page number, and staple it to the first form. (It is not necessary that other parts of the additional form(s) be completed.)

Any information that is relevant but not appropriate for any of the data fields should be printed (in free text) in the space provided for "Comments" (Section E). Also include here additional information about the data that is thought to be important or that is "flagged" in Section B-17, which is also headed "Comments" but is limited to 19 spaces. Comments entered in field B-17 will appear at the head of EACH REPORT. This is not a field for recording plant data, but for recording comments, for example, on the data quality, who did the test, identifying some problem area, or instructing the person reading the report to refer to the Section E comments. FINALLY, IF DATA ARE LACKING TO COMPLETE FIELD(S), LEAVE BLANK SPACES. DO NOT ENTER ZEROS, HORIZONTAL LINES, OR ANY OTHER MARKS FOR EMPTY FIELDS.

Right justify all numbers in their fields and fill the field completely (leading and trailing zeros). If no decimal is entered, the computer will automatically treat it as a whole number.

Also, code the letter "O" as "O" and the number zero as "0."

IMPORTANT: Consistent units of measure must be used throughout all fields. (Metric system is preferred.)

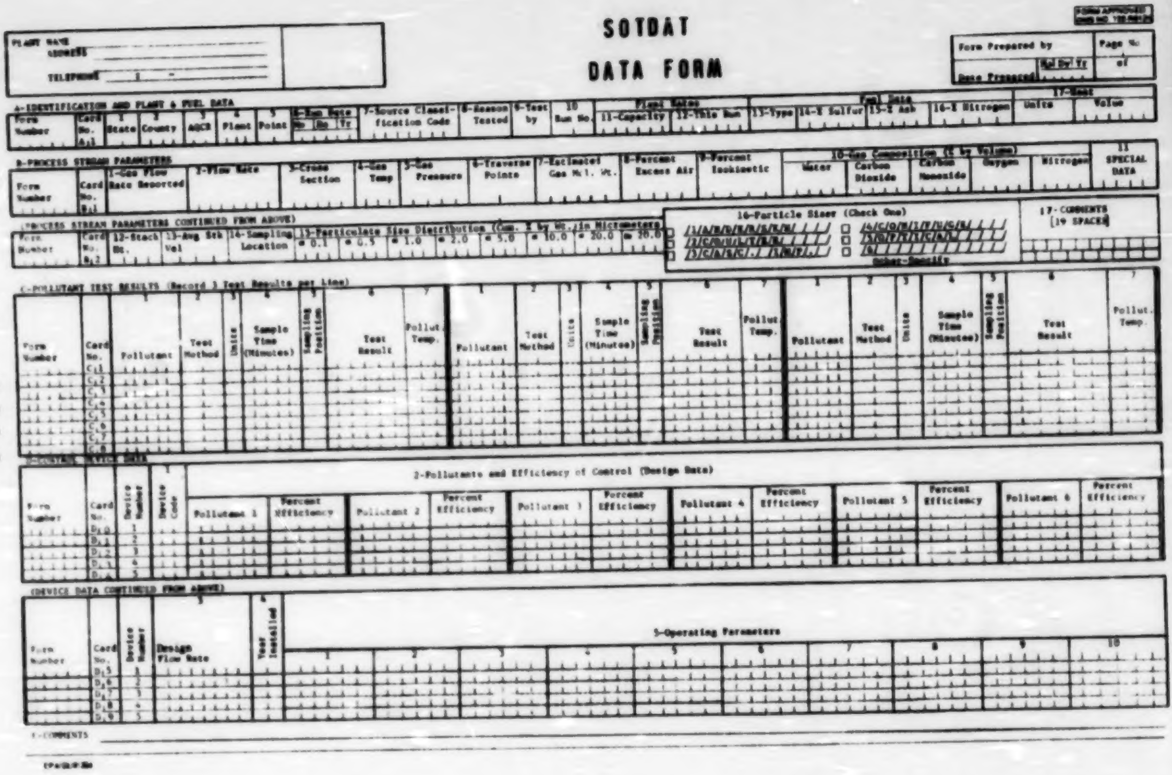
Form numbers represent each EPA Regional Office, Washington, and OAQPS, with the first position letter as follows:

A - National Air Data Branch and other OAQPS

B - Washington, D.C.

C - EPA Region I

D - EPA Region II



SOTDAT

DATA FORM

PLANT NAME
ADDRESS
TELEPHONE ( ) -

Form Prepared by
Date Prepared Mo Dy Yr
Page No. of

A-IDENTIFICATION AND PLANT & FUEL DATA

Form Number	Card No. A,1	1 State	2 County	3 AQCR	4 Plant	5 Point	6-Run Date Mo	Dy	Yr	7-Source Classification Code	8-Reason Tested	9-Test by	10 Run No.	Plant Rates 11-Capacity	12-This Run	Fuel Data 13-Type	14-% Sulfur	15-% Ash	16-% Nitrogen	17-Heat Units	Value

B-PROCESS STREAM PARAMETERS

Form Number	Card No. B,1	1-Gas Flow Rate Reported	2-Flow Rate	3-Cross Section	4-Gas Temp	5-Gas Pressure	6-Traverse Points	7-Estimated Gas Mol. Wt.	8-Percent Excess Air	9-Percent Isokinetic	10-Gas Composition (% by Volume) Water	Carbon Dioxide	Carbon Monoxide	Oxygen	Nitrogen	11 SPECIAL DATA

(PROCESS STREAM PARAMETERS CONTINUED FROM ABOVE)

Form Number	Card No. B,2	12-Stack Ht.	13-Avg Stk Vel	14-Sampling Location	15-Particulate Size Distribution (Cum. % by Wt.,in Micrometers) ≤ 0.1	≤ 0.5	≤ 1.0	≤ 2.0	≤ 5.0	≤ 10.0	≤ 20.0	≥ 20.0	16-Particle Sizer (Check One)	17-COMMENTS [19 SPACES]	

16-Particle Sizer (Check One)
☐ 1 ANDERSEN
☐ 2 COULTER
☐ 3 CASC. IMP.
☐ 4 [illegible]
☐ 5 [illegible]
☐ 6 Other-Specify

C-POLLUTANT TEST RESULTS (Record 3 Test Results per Line)

Form Number	Card No.	1 Pollutant	2 Test Method	3 Units	4 Sample Time (Minutes)	5 Sampling Position	6 Test Result	7 Pollut. Temp.	1 Pollutant	2 Test Method	3 Units	4 Sample Time (Minutes)	5 Sampling Position	6 Test Result	7 Pollut. Temp.	1 Pollutant	2 Test Method	3 Units	4 Sample Time (Minutes)	5 Sampling Position	6 Test Result	7 Pollut. Temp.
	C,1																					
	C,2																					
	C,3																					
	C,4																					
	C,5																					
	C,6																					
	C,7																					
	C,8																					

D-CONTROL DEVICE DATA

Form Number	Card No.	Device Number	1 Device Code	2-Pollutants and Efficiency of Control (Design Data) Pollutant 1	Percent Efficiency	Pollutant 2	Percent Efficiency	Pollutant 3	Percent Efficiency	Pollutant 4	Percent Efficiency	Pollutant 5	Percent Efficiency	Pollutant 6	Percent Efficiency
	D,0	1													
	D,1	2													
	D,2	3													
	D,3	4													
	D,4	5													

(DEVICE DATA CONTINUED FROM ABOVE)

Form Number	Card No.	Device Number	3 Design Flow Rate	4 Year Installed	5-Operating Parameters 1	2	3	4	5	6	7	8	9	10
	D,5	1												
	D,6	2												
	D,7	3												
	D,8	4												
	D,9	5												

E-COMMENTS

Figure 3.3.1-a. SOTDAT Data Form.

E - EPA Region III

F - EPA Region IV

G - EPA Region V

H - EPA Region VI

I - EPA Region VII

J - EPA Region VIII

K - EPA Region IX

L - EPA Region X

M - Other (Specify in Comments Section E)

The next five positions are to be assigned by the appropriate office for numbers 00000 through 99999 to identify source test runs. Numbers need not be sequential, but are not to be duplicated. This number will be used for computer reference to facilitate the form retrieval from the form file.

The following publications must be utilized in completing this form:

1. AEROS User's Manual, Volume V, Manual of Codes.
2. Guide for Compiling a Comprehensive Emission Inventory, APTD-1135, or other appropriate sections of AEROS Volume II.

Finally, throughout these instructions, standard conditions are to be 20°C and 760 mm mercury.

SPECIFIC INSTRUCTIONS

Field	Field Name	Field Length and Type*	Description
A - IDENTIFICATION AND PLANT AND FUEL DATA (use code numbers from Volume V)			
A01	State	2I	State in which installation is located (Volume V, Section 2.1.0).
A02	County	4I	County in which installation is located (Volume V, Section 2.2.0).
A03	AQCR (Air Quality Control Region)	3I	AQCR in which installation is located (Volume V, Section 2.3.0).
A04	Plant	4I/C	Four-digit number (or alphabetic character) assigned to the installation (unique for each installation in the county). To be assigned from NEDS file.
A05	Point	2I/C	Two-digit number (or alphabetic character) assigned to the emission point being tested within the installation (unique for each emission point in the installation). To be assigned from NEDS file.
A06	Run Date	6I	Month, day, and last two digits of year in which installation was tested.
A07	Source Classification Code	8I	Eight-digit code defining nature of installation being tested. These codes identify all processes except those specified as "inprocess fuel" combustion.

*I = integer or alphabetic; F = decimal; C = character.

Field	Field Name	Field Length and Type	Description
A08	Reason Tested	1I	Reason test was performed: 0 - Special studies 1 - New Source Performance Standards preparation 2 - Determine compliance with Federal regulations 3 - Determine compliance with State regulations 4 - Determine compliance with local regulations 8 - Unknown 9 - Other-identify in Comments, Section E
A09	Test by	1I	Party performing test: 0 - Owner 1 - Contractor obtained by owner 2 - Local agency 3 - Contractor under supervision of local agency 4 - State agency 5 - Contractor under supervision of State agency 6 - Federal agency 7 - Contractor under supervision of Federal agency 8 - Unknown 9 - Other-specify in Comments, Section E
A10	Run Number	2I	Unique number assigned to each run within the source test. Assign sequentially or to agree with existing numbers.

Field	Field Name	Field Length and Type	Description
A11	Capacity	7F	Activity level per hour at maximum capacity: Maximum design rate (express in SCC units).(A maximum of three places to the right of the decimal point is permitted.)
A12	This Run	7F	Production rate during Run: activity level (e.g., production rate) per hour (express in SCC units). (A maximum of three places to the right of the decimal point is permitted.)
A13	Class	1I/C	Class fuel used: indicate fuel class with character listed below: Fuel oils A No. 1 fuel oil B No. 2 fuel oil C No. 3 fuel oil D No. 4 fuel oil E No. 5 fuel oil F No. 6 fuel oil Gases G Natural gas H Liquefied petroleum gas I Manufactured gas J Coke oven gas K Blast furnace gas L Producer gas M Sewage gas N butane O propane

Field	Field Name	Field Length and Type	Description
			Coals and other solids
			P High temperature coke
			R Anthracite coal
			S Low temperature coke
			T Low volatile bituminous coal
			U Medium volatile bituminous coal
			V Subbituminous coal
			W High volatile bituminous coal
			X Lignite
			Y Bagasse
			Z Wood
			Waste*
			1 Trash
			2 Rubbish
			3 Refuse
			4 Garbage
			5 Animal wastes
			6 Gaseous wastes
			7 Semisolid and liquid wastes
			Other
			Q Other, identify in comments, Section E
A14	% Sulfur	5F	Percentage by weight in fuel on as-used basis. (A maximum of three places right of the decimal point is permitted.)
A15	% Ash	5F	Percentage by weight in fuel on as-used basis. (A maximum of three places right of the decimal point is permitted.)

*Reference: Incinerator Standards. Incinerator Institute of America. N.Y. 1966.

Field	Field Name	Field Length and Type	Description
A16	% Nitrogen	5F	Percentage by weight in fuel on as-used basis. (A maximum of three places right of the decimal point is permitted.)
A17	Heat: Units	1I	Specifies units used with fuel feed rate value: A - liters/min G - gallons/min B - cubic meters/min H - cubic feet/min C - kilograms/min I - pounds/min D - liters/hour J - gallons/hour E - cubic meters/hour K - cubic feet/hour F - kilograms/hour L - pounds/hour
	Value	7F	Fuel rate in indicated units at standard conditions (20°C, 760 mm Hg). (A maximum of three places right of the decimal point is permitted.)
B - PROCESS STREAM PARAMETERS			
B01	Gas Flow Rate Reported	1I	0-scmm-dry 2-scfm-dry 1-acmm-wet 3-acfm-wet
B02	Flow Rate	8F	Value in units indicated in B01. (A maximum of two places right of the decimal point is permitted.)
B03	Cross Section (sq m)	6F	Duct (stack) cross-sectional area, in square meters (at sample point). (A maximum of three places to the right of the decimal point is permitted.)
B04	Gas Temperature (°C)	4F	In degrees Centigrade. (A maximum of one place right of the decimal point is permitted.)

Field	Field Name	Field Length and Type	Description
B05	Gas Pressure (cm Hg)	5F	In centimeters of mercury, absolute, in stack. (A maximum of three places right of the decimal point is permitted.)
B06	Traverse Points	2I	Number of points for the run.
B07	Estimated Gas Molecular Weight (grams/gram-mole)	6F	Value calculated on a dry basis, in grams per gram-mole. (A maximum of three places to the right of the decimal point is permitted.)
B08	Percent Excess Air	5F	Percentage by volume.
B09	Percent Isokinetic	5F	Percentage isokinetic (ratio of sample to local line stream velocities).
B10	Gas Composition (% by volume)	5Fx5	Percent by volume for each of: water, carbon dioxide, carbon monoxide, oxygen, nitrogen. (A maximum of two places to the right of the decimal point is permitted.)
B11	Special Data	5C	Leave blank.
B12	Stack Height (m)	4F	Height of stack associated with this gas stream in meters. (A maximum of two places to the right of the decimal point is permitted.)
B13	Average Stack Velocity (m/sec)	4F	Average gas velocity in meters per second. (A maximum of three places right of the decimal point is permitted.)

Field	Field Name	Field Length and Type	Description
B14	Sampling Location	1I	Number of stack diameters downstream from nearest disturbance (e.g., bend, joint, constriction, valve).
B15	Particulate Size Distribution (cumulative % by weight, in micrometers)	4Fx8	The percent by weight of the total particulate sample that is less than or equal to: 0.1 micrometer 0.5 micrometer 1.0 micrometer 2.0 micrometers 5.0 micrometers 10.0 micrometers 20.0 micrometers And greater than or equal to: 20.0 micrometers (A maximum of one place right of the decimal point is permitted.)
B16	Particle Sizer (check one on form)	12C	1-Andersen 2-Coulter 3-Cascade Impactor 4-Conifuge 5-Optical method - specify in Comments Section E. 6-Other-specify in Comments, Section E.
B17	Comments	19C	A 19-space comment zone. Comments here will appear with each report concerning this data sheet. General data comments should be made in Section E.

C - POLLUTANT TEST RESULTS (Record 3 test results per line; maximum of 24 permitted; fill each line before starting another)*

Field	Field Name	Field Length and Type	Description
C01	Pollutant	6I/C	The 6-digit codes listed in Volume V, Section 5.7.0, will be used to identify the name of and analysis methods used with both major pollutants and trace pollutants.
C02	Test Collection Method	2I	A 2-digit field is reserved to serve as a code to define the sample method that was used to make the pollutant concentration determination. The codes to be used are listed in Volume V, Section 5.8.0.
C03	Units	1I	A 1-digit code is used to identify the concentration units in which the tests result is reported. The following units are coded as: 0-grains/scf dry (unadjusted for excess air) 1-kilograms/1000 kilograms (lb/1000 lb) wet flue gas 2-kilograms/1000 kilograms (lb/1000 lb) dry flue gas 3-parts per million dry gas (by volume; unadjusted for excess air) 4-micrograms/scm dry gas 9-emission factor. Use code 9 only when none of the above can be used. This means that test result will be in kg/SCC units, consistent with SCC units used in field A12.

*Note: If more than 24 pollutants were sampled and analyzed, enter results for the 25th, 26th, etc., in Section C of a second form, list the page number in the upper right-hand corner, and staple to the first form. (It is not necessary to complete the other parts of the second form.)

Field	Field Name	Field Length and Type	Description
C04	Sample Time (minutes)	5F	A 5-digit field is reserved for recording the time (in minutes) elapsed during which the pollutant was sampled. (A maximum of two places to the right of the decimal point is permitted.)
C05	Sampling Position	1I	A 1-digit code is used to identify the sampling position relative to air pollution control equipment. This is the number of control devices in the stream flow upstream from the sampling position, regardless of effect of device on the pollutant. If, for example, sulfur dioxide is sampled after a cyclone, an electrostatic precipitator, and a wet scrubber, the sampling position would be designated as "3" (after tertiary collector). 0 - Uncontrolled (or inlet) 1 - After primary collector 2 - After secondary collector 3 - After tertiary collector 4 - After quaternary collector
C06	Test Result	6F	A 6-digit field is reserved for recording the test result. Results reported in units other than those specified in Field C03 need to be converted to one of the specified units. (A maximum of five places to the right of the decimal point is permitted.)
C07	Pollutant Temperature (°C)	3F	The temperature of the pollutant stream in degrees Centigrade, when measured at the sample flow meter. (A maximum of one place to the right of the decimal point is permitted.)

Field	Field Name	Field Length and Type	Description

If the number of pollutants exceeds 24 for any one test report, these are to be reported on a second form appended to the first. When these data are keypunched, they will be reported on F/# cards prepared otherwise identical to C/# cards.

D - CONTROL DEVICE DATA

Field	Field Name	Field Length and Type	Description
D01	Device Code	3I	Three-digit identification code as defined for NEDS in Volume V, Section 3.3.0.
D02	Pollutant Controlled	6C	Six-digit identification code for each pollutant controlled up to six pollutants at design specifications (see Volume V, Section 5.7.0).
	Efficiency of Control (Design Data)	5F	Four-digit value (plus decimal point) to indicate design efficiency for the pollutant. Maximum possible efficiency which can be entered is 99.99% Report only those pollutants and corresponding efficiencies for which device is designed to control. (A maximum of two places to the right of the decimal point is permitted.)
D03	Design Flow Rate (acmm)	8F	Expressed in actual cubic meters per minute, this is flow rate for which the device was designed. Do not enter test flow rate. (A maximum of seven places to the right of the decimal point is permitted.)
D04	Year Installed	2I	Year device installed (last two digits).
D05	Operating Parameters	6F	One of ten parameters used to characterize device (listing of devices and parameters to enter here appears in Volume V, Section 5.11.0.). Do not record design parameters. (A maximum of two places to the right of the decimal point is permitted.)

Field	Field Name	Field Length and Type	Description
E - COMMENTS			Any alphabetic or numeric comments may be entered in free form text at the bottom of the form. If more space is required, use additional forms and attach to first form. Comments will not exceed 800 spaces.
F - ADDITIONAL POLLUTANTS			These cards are to be prepared if more than 24 pollutants are reported.
G - ADDITIONAL DATA			Plant name, address, and phone number (to be less than 70 characters in length). This information is recorded in block at top left of form.

QUESTIONS AND ANSWERS

To further clarify the preceding instructions, the following representative "questions and answers" have been formulated:

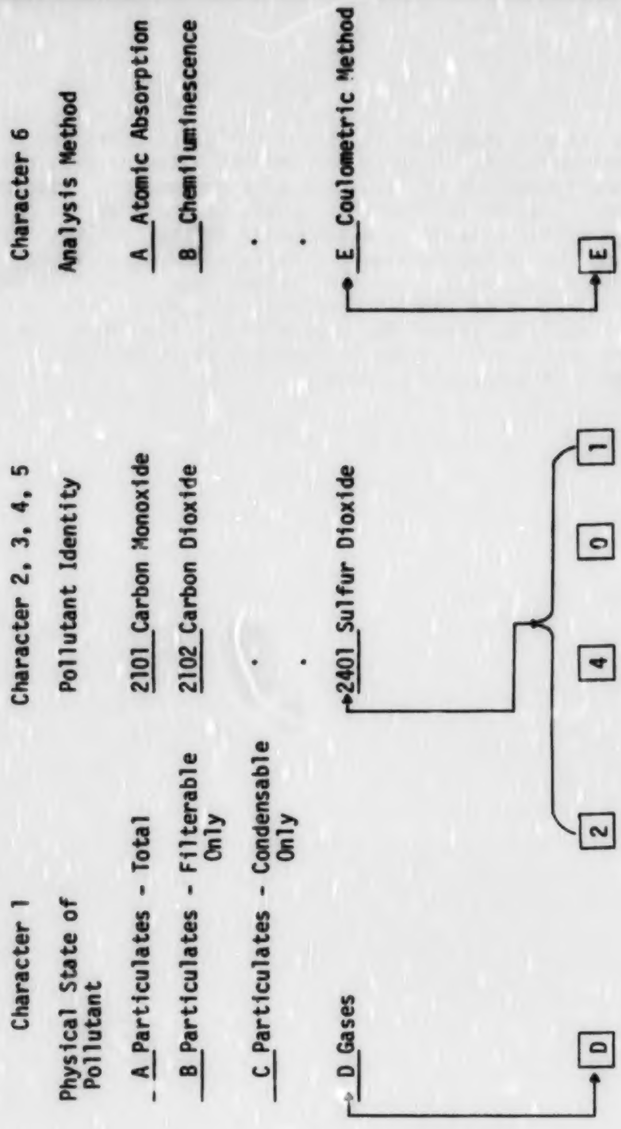
1.	Are Orsat analyses considered as test results for coding on C cards?	No. These data are to be entered in field B10.
2.	Should control devices listed be all devices on the piece of equipment or just those indicated in field C05, "Sampling Position"?	Only those in C05.
3.	If a device control efficiency is unknown, what code should be used?	Use the medium efficiency code.
4.	What pollutant code should be used for total gaseous hydrocarbons, since "total" is listed under aliphatic compounds and "gross" is listed under aromatic compounds?	Use code 3101.

5.	Are gaseous samples which are taken nonsimultaneously with a particulate sample considered part of the same run?	If at least one-half of the gaseous samples were taken during the particulate sample they are considered to be part of the same run. If not, code them on a separate sheet, even though most process stream parameters will be unavailable.
6.	If a traverse point is sampled more than once during a particulate run, how many times is it counted for coding in field B06 Traverse Points?	Only once.
7.	If a test is actually performed, and the result is nil or zero should the test be recorded?	Yes. Enter the result as zero.
8.	Is the code for pollutants caught by a control device to be "total particulate," "filterable particulate," or "condensable particulate"?	Use code A1101 (total particulate), because most particulate devices were designed for controlling both filterable and condensable fractions, and design efficiencies (field D02) are usually given in terms of total particulate. However, if design efficiencies are given for the other particulate fractions, they should also be entered in field D02, alongside their respective pollutant codes (B1101 for filterable particulate, and C1101 for condensable particulate).
9.	What should we do with data that are either too large or small to "fit" in the field(s) allotted for them on the form?	Enter in "Comments" (Section E). Leave appropriate field(s) blank.

10.	How does one enter a negative pollutant temperature?	Leave field C07 blank and write true temperature in "Comments".
11.	Is a new coding sheet required when gaseous samples are taken at the inlet and the outlet of a control device, while particulate sampling is performed only at the outlet of the device?	No. Both sets of test results are to be recorded on the same sheet.
12.	If effective duct cross sectional area is different from the designed area (due to negative flow or sediment buildup), which should be entered in field B03?	Enter effective area in field B03 of form and write actual in "Comments".
13.	If a single stack, fed by several gas streams, each containing a different number and types of control devices, is sampled, how many devices are considered to be up-stream from the sampling point?	The number of devices found in the stream containing the most pieces of equipment is used.
14.	Are operating parameters (field D05) "operating" or "design" values?	Operating. No design data are to be entered in this field.
15.	If the exhaust from a single piece of equipment breaks into two or more separate gas streams and both streams are tested, what values are entered in fields A11 and A12 (activity levels)?	None! Leave fields blank and enter activity levels in "Comments," along with a statement such as: "This form contains test data from one of three stacks. See form numbers A37799 and A37800 for data on the other stacks."

POLLUTANT CODES

The following example should indicate how Pollutant codes are assigned using Volume V, Section 5.1.0. Suppose that during a source test run, sulfur dioxide is continuously sampled and analyzed by a coulometric instrument. Obviously, character 1, which indicates the physical state of the pollutant, would be "D," since sulfur dioxide is a gas under all but the most extreme sampling conditions. Referring to page 5.7.2-31, under Group VI Compounds and Ions, for characters 2,3,4 and 5, one would select code "2401," corresponding to sulfur dioxide. Since a coulometric analyzer is used in this case, code "E" on page 5.7.3-1 would be chosen for character 6. Therefore, the code to be entered on the form in Field C01 under Pollutant 1 would be "D2401E." Figure 3.3.1-b illustrates this selection process.



Character 1
Physical State of Pollutant
A Particulates - Total
B Particulates - Filterable Only
C Particulates - Condensable Only
D Gases
Character 2, 3, 4, 5
Pollutant Identity
2101 Carbon Monoxide
2102 Carbon Dioxide
2401 Sulfur Dioxide
Character 6
Analysis Method
A Atomic Absorption
B Chemiluminescence
E Coulometric Method
D
2
4
0
1
E

Figure 3.3.1-b. Pollutant code selection.

GENERAL

The Site Identification Form (Figure 3.4.1-a) has been designed to be both a coding form and a reference form suitable for filing in a loose-leaf notebook. The form is also designed to be prepared in two operations. The left side of the form is completed by State or Local Agency personnel. The form is then submitted to the appropriate EPA office (usually an EPA Regional Office). EPA personnel will enter the appropriate data codes on the right side of the form, both front and back.

FORM PREPARATION - FIELD ORGANIZATION PORTION

The left side of the form (field organization portion) is prepared as follows:

Heading

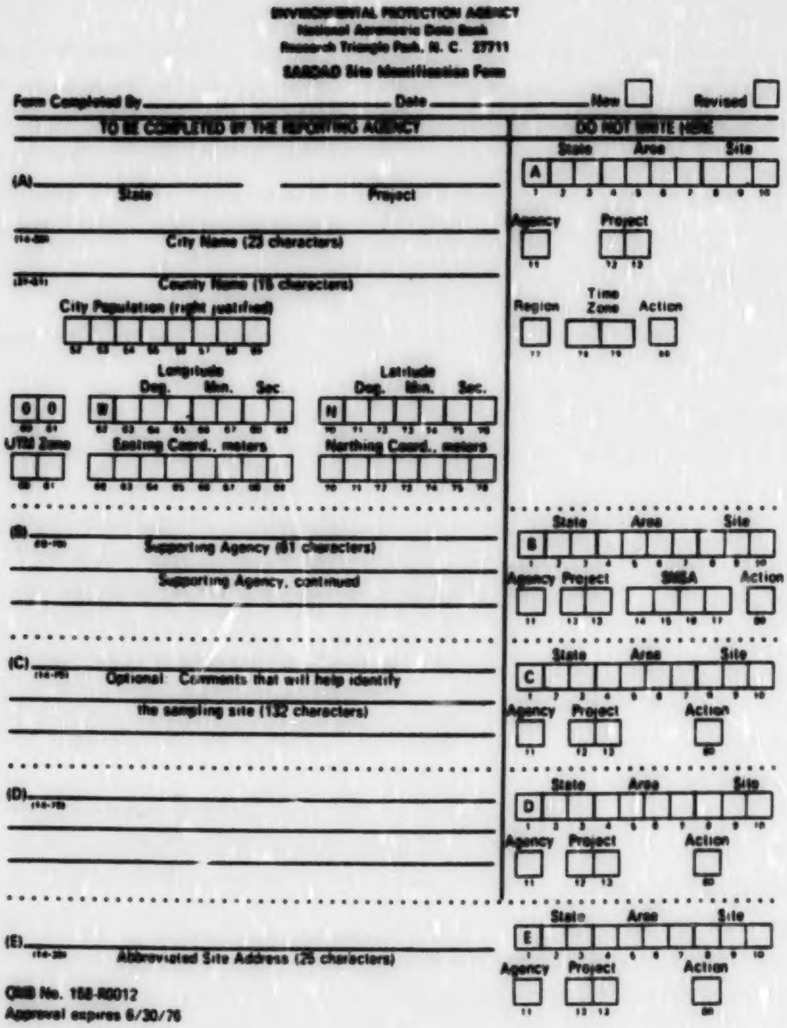
Enter, in the space provided, your name and title, today's date and indicate by an "X" in the appropriate block whether this form is a new submission or a revision to existing site identification data. Generally a change in any information given constitutes need for a revision. If the site is physically moved, a new station should be identified with a new complete submission.

Section (A)

State - Enter the name of the state in which the sampling site is located.

Project - Enter the project classification description for this site, as given in Section 4.2.0, Volume V. Do not enter the 2-digit code number preceding the classification description.

City Name - Enter the name of the area (city or town) in which the site is located if the population of that area is 2500 or more. If the site is located outside the jurisdictional limits of an area of this size, enter the name of the county in which the site is located. Limit this entry to 23 characters, using reasonable abbreviations if necessary. Use common dictionary abbreviations if necessary (e.g., Mt. for mountain, St. for Saint).



ENVIRONMENTAL PROTECTION AGENCY
National Aerometric Data Bank
Research Triangle Park, N. C. 27711
SAROAD Site Identification Form

Form Completed By ______________ Date ______________ New ☐ Revised ☐

TO BE COMPLETED BY THE REPORTING AGENCY

(A) ______________ State ______________ Project

______________ City Name (22 characters)

______________ County Name (15 characters)

City Population (right justified)

Longitude Deg. Min. Sec. — W

Latitude Deg. Min. Sec. — N

0 0

UTM Zone

Easting Coord., meters

Northing Coord., meters

(B) ______________ Supporting Agency (61 characters)

______________ Supporting Agency, continued

(C) ______________ Optional: Comments that will help identify the sampling site (132 characters)

(D) ______________

(E) ______________ Abbreviated Site Address (25 characters)

OMB No. 158-R0012
Approval expires 6/30/76

DO NOT WRITE HERE

A — State Area Site; Agency Project; Region Time Zone Action

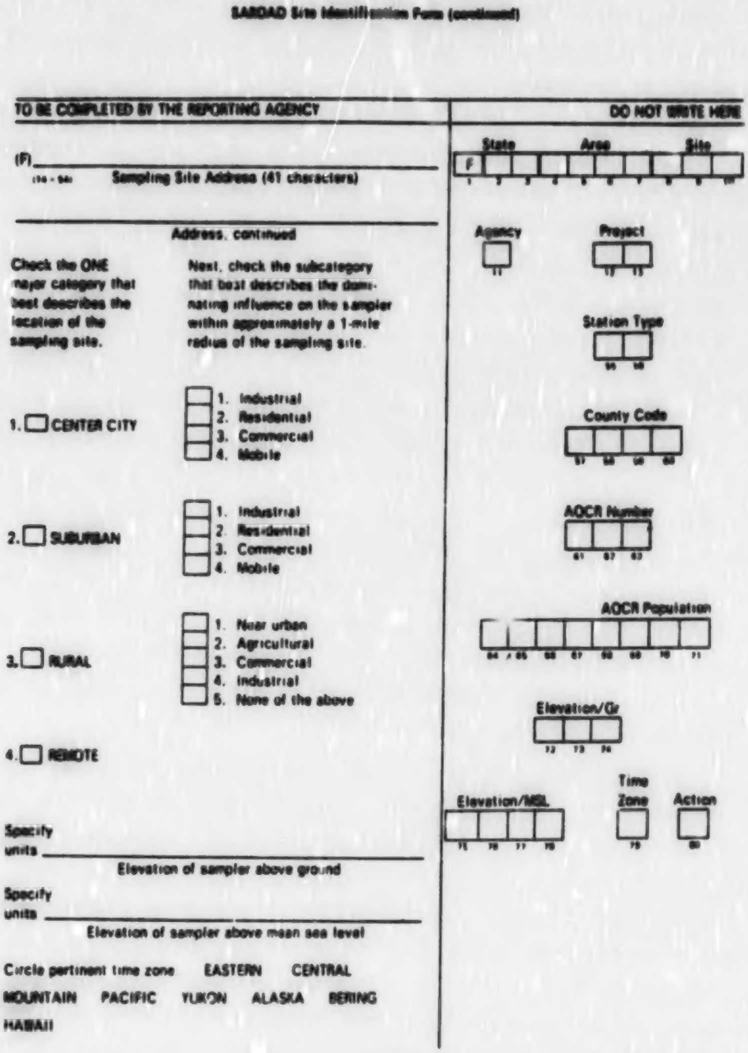
B — State Area Site; Agency Project SMSA Action

C — State Area Site; Agency Project Action

D — State Area Site; Agency Project Action

E — State Area Site; Agency Project Action

Figure 3.4.1-a. SAROAD Site Identification Form.



SAROAD Site Identification Form (continued)

TO BE COMPLETED BY THE REPORTING AGENCY

(F)____
(14 - 54) Sampling Site Address (41 characters)

____
Address, continued

Check the ONE major category that best describes the location of the sampling site.

Next, check the subcategory that best describes the dominating influence on the sampler within approximately a 1-mile radius of the sampling site.

1. ☐ CENTER CITY
   - ☐ 1. Industrial
   - ☐ 2. Residential
   - ☐ 3. Commercial
   - ☐ 4. Mobile
2. ☐ SUBURBAN
   - ☐ 1. Industrial
   - ☐ 2. Residential
   - ☐ 3. Commercial
   - ☐ 4. Mobile
3. ☐ RURAL
   - ☐ 1. Near urban
   - ☐ 2. Agricultural
   - ☐ 3. Commercial
   - ☐ 4. Industrial
   - ☐ 5. None of the above
4. ☐ REMOTE

Specify units ______________________________
Elevation of sampler above ground

Specify units ______________________________
Elevation of sampler above mean sea level

Circle pertinent time zone EASTERN CENTRAL MOUNTAIN PACIFIC YUKON ALASKA BERING HAWAII

DO NOT WRITE HERE

State Area Site
F ☐☐☐☐☐☐☐☐☐
1 2 3 4 5 6 7 8 9 10

Agency ☐ 11

Project ☐☐ 12 13

Station Type ☐☐ 55 56

County Code ☐☐☐☐ 57 58 59 60

AQCR Number ☐☐☐ 61 62 63

AQCR Population ☐☐☐☐☐☐☐☐ 64 / 65 66 67 68 69 70 71

Elevation/Gr ☐☐☐ 72 73 74

Elevation/MSL ☐☐☐☐ 75 76 77 78

Time Zone ☐ 79

Action ☐ 80

Figure 3.4.1-a (continued). SAROAD Site Identification Form.

County Name - Enter the name of the county in which the sampling site is located even if the county name was entered on the line above. Enter the county equivalent as necessary.

City Population - Enter the population of the town or city in which the site is located based on census data. This entry must be right justified with leading zeros. If the census data are not available, enter the source of the population figure to the right of block 59. If the name of the county was entered in "City Name," enter all zeros in this field.

Longitude - Enter degrees, minutes, and seconds of longitude of this site, as indicated. If degrees of longitude are less than 100, enter a zero in block 63. Make no entry if UTM system for site location is to be used. Longitude and latitude are automatically calculated if the UTM system is used.

Latitude - Enter the degrees, minutes, and seconds of latitude of this site, as indicated. Make no entry if UTM system for site location is to be used.

UTM Zone - Enter the 2-digit UTM (Universal Transverse Mercator) zone code. See Section 3.1.2, Volume V.

Easting Coord., Meters - Enter the easting UTM coordinate for this site (in meters) from the appropriate section of the UTM map. This entry must be right justified with leading zeros and should be accurate to the nearest meter. UTM coordinates are automatically calculated if longitude and latitude have been entered.

Northing Coord., Meters - Enter the northing UTM coordinate for this site (in meters) from the appropriate section of the UTM map. This entry must be right justified with leading zeros and should be accurate to the nearest meter.

Section (B)

Supporting Agency - Enter the name of the city, county, regional, state, or other agency responsible for the laboratory analysis of data. This may or may not be the Agency which operates the physical sampling site. If the Operating Agency is different, code this information in the COMMENTS field of Sections (C) and (D).

Sections (C) and (D)

Comments - Enter appropriate comment which could help characterize the sampling site. Applicable comments might be as follows:

Site within two blocks of heavy construction, 1972.
Site on building adjacent to main street of town.
Organization site code if different from EPA code.
Parameter sampled at site.
Name of agency operating the site.
Termination date if discontinued.
Start date of new site.

Limit the combined total number of characters in both sections to 132.

Section (E)

Abbreviated Site Address - Make no entry. EPA personnel will enter an abbreviation appropriate for use in computer reports.

Section (F)

Sampling Site Address - Enter the full street address of this site and other pertinent identifying information as space allows. For areas that do not have a street address, enter a descriptive phrase such as the name of a building or area that will adequately locate the site. Do not repeat city, county, or state names already entered.

Station Type - Enter an "X" in the appropriate boxes as per instruction on the form. See Section 4.11.0, Volume V, for more complete site description definitions.

Elevation of Sampler above Ground - Enter the elevation of the sampling site (probe or inlet) above ground level. If the samplers are not located at the same level for different pollutants, this information could be entered in the comments field. For example: SO_2 sampler at 30 feet. NO sampler at 20 feet.

Sections (C) and (D)

Comments - Enter appropriate comment which could help characterize the sampling site. Applicable comments might be as follows:

Site within two blocks of heavy construction, 1972.
Site on building adjacent to main street of town.
Organization site code if different from EPA code.
Parameter sampled at site.
Name of agency operating the site.
Termination date if discontinued.
Start date of new site.

Limit the combined total number of characters in both sections to 132.

Section (E)

Abbreviated Site Address - Make no entry. EPA personnel will enter an abbreviation appropriate for use in computer reports.

Section (F)

Sampling Site Address - Enter the full street address of this site and other pertinent identifying information as space allows. For areas that do not have a street address, enter a descriptive phrase such as the name of a building or area that will adequately locate the site. Do not repeat city, county, or state names already entered.

Station Type - Enter an "X" in the appropriate boxes as per instruction on the form. See Section 4.11.0, Volume V, for more complete site description definitions.

Elevation of Sampler above Ground - Enter the elevation of the sampling site (probe or inlet) above ground level. If the samplers are not located at the same level for different pollutants, this information could be entered in the comments field. For example: $\underline{SO_2}$ sampler at 30 feet. $\underline{NO}$ sampler at 20 feet.

Elevation of Sampler above Mean Sea Level - Enter the ground elevation of the sampling (probe or inlet) above mean sea level, following the same criteria as set forth above.

Time Zone - Circle the time zone in which this site is located.

FORM PREPARATION - EPA PORTION

The right side of the form (EPA portion) is prepared as follows:

Section (A)

State-Area-Site - Referring to Sections 2.1.0 and 2.2.0, Volume V, assign and enter the proper codes in blocks 2-10, right justified, as follows. A 2-digit state code should be assigned. This is followed by a 4-digit area code which represents the area shown in the City Name field of Section (A). The last 3-digit code should be the next highest site code assigned within the area. Example: if site 311400003 exists and another site form is submitted for State-Area 311400, then the site code should be assigned as 311400004. Under no circumstances should the same State-Area-Site code exist for more than one physical sampling site.

Agency - Enter in block 11 the appropriate agency-type code. This code should reflect the type of Agency responsible for the laboratory analyses of these data. See Section 4.1.0, Volume V.

Project - Enter in blocks 12-13 the appropriate project classification code from Section 4.2.0, Volume V.

Region - The code for the EPA region in which this site is located is entered in block 77.

Time Zone - In blocks 78-79 enter the code from Section 4.12.0, Volume V, for the time zone in which this site is located.

Action - Enter in block 80 the code from Section 4.8.0, Volume V, for the type of action required of this submission.

Section (B)

State-Area-Site-Agency-Project - Enter the same data as in Section (A).

SMSA - Enter in blocks 14-17 the SMSA code from Section 2.7.0, Volume V, for the area in which this site is located.

Action - Enter in block 80 the code from Section 4.8.0, Volume V, for the type of action required for this submission.

Section (C)

State-Area-Site-Agency-Project - Enter the same data as in Section (A).

Action - Enter in block 80 the code from Section 4.8.0, Volume V, for the type of action required for this submission.

Section (D)

Same as Section (C).

Section (E)

State-Area Site-Agency-Project - Enter the same data as in Section (A).

Abbreviated Site Address - Enter an abbreviated site address 25 characters long from the address given in Section (F).

Action - Enter in block 80 the code from Section 4.8.0, Volume V, for the type of action required for this submission.

Section (F)

State-Area-Site-Agency-Project - Enter the same data as in Section (A).

Station Type - Enter in block 55 the number of the major location category and in block 56 the number of the major location category as indicated on the left side of the form. For remote, since there is no minor category, enter '41' in blocks 55-56.

County Code - Enter the code number for the county in which the site is located. Code numbers will be found in Section 2.2.0, Volume V. This entry must be right-justified with leading zeros.

AQCR Number - Assign and enter the appropriate AQCR number. This entry must be right-justified with leading zeros. Refer to Section 2.3.0, Volume V, for listing of codes.

AQCR Population - Enter the AQCR population (most recent census, i.e. 1970) for the area in which this site is located. This entry must be right-justified with leading zeros. If the AQCR population is unknown, it may be left blank and it will be completed by the update program.

Elevation/Gr - Enter the elevation above ground level of this site in blocks 72-74, as indicated on the left side of the form. Entry must be made in feet. If some other unit of measure is indicated, the stated value must be converted to feet and then entered. This entry must be right-justified with leading zeros.

Elevation/MSL - Enter in blocks 75-78 the ground elevation above mean sea level of this site as indicated above.

Action - Enter in block 80 the code from Section 4.8.0, Volume V, for the type of action required for this submission.

SUBMISSION OF SITE IDENTIFICATION FORMS

Site identification forms are submitted to EPA whenever a new site is established or when the environment of an existing site changes significantly. Periodically EPA will mail site description listings to participants for validation, correction, or other updating.

When changes for existing sites are submitted, the site identification data on the right hand side of the form will be completed using the State-Area-Site-Agency-Project codes assigned by EPA. Other data will be coded for only those items that have changed since the prior submission.

GENERAL

The Hourly Data Form (Figure 3.4.2-a) is used for recording data observed or averaged at intervals of less than 24 hours. For example, it would be used for 2-hour coefficient of haze (COH) readings and for 1-hour gaseous pollutant readings. For hourly data, two Hourly Data Forms will be needed for a month.

FORM PREPARATION

The sampling site identification information to be entered on this form should be exactly the same as the corresponding information on the Site Identification Form for this site. Entries are made on the Hourly Data Form as follows:

Identification Section

Agency - Enter the name of the city, county, region, state, or other agency that operates this site. This is the organization which is responsible for the laboratory analysis. Use whatever reasonable abbreviations are necessary to fully identify this organization.

City Name - Enter the name of the area in which this site is located if the population of that area is 2500 or more. If the site is located outside of the jurisdictional limits of an area of this size, enter the name of the county in which the site is located or the appropriate county equivalent.

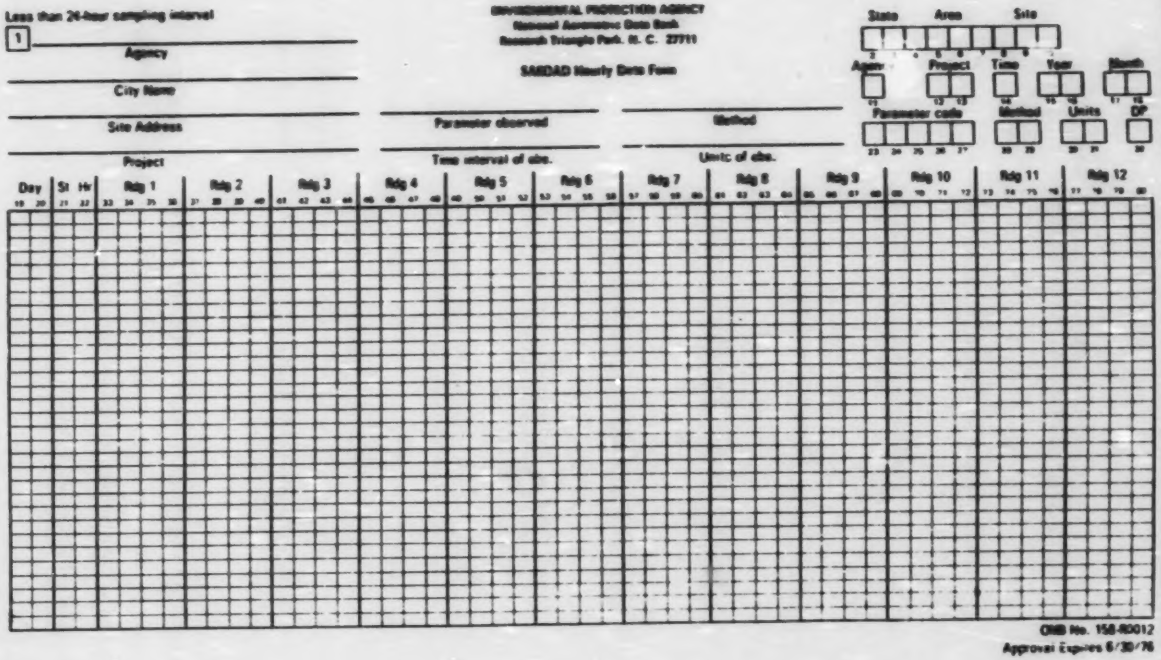
Site Address - Enter the full street address of this site. For areas that do not have a street address, enter a descriptive phrase that will serve to adequately locate the site. Do not repeat city, county, or state names already entered.

Project - Enter the project classification description for this site as given in Volume V, Section 4.2.0. Do not enter the two-digit code number preceding the classification description.

Parameter Section

Parameter Observed - Enter the name of the pollutant or the meteorological parameter being measured, such as "Sulfur Dioxide" or "Ambient Temperature."

Method - Enter the type of instrument and/or analytical method employed in the sampling at this site.



Less than 24-hour sampling interval
1 ______ Agency
______ City Name
______ Site Address
______ Project

ENVIRONMENTAL PROTECTION AGENCY
National Aerometric Data Bank
Research Triangle Park, N. C. 27711

SAROAD Hourly Data Form

______ Parameter observed
______ Time interval of obs.
______ Method
______ Units of obs.

State Area Site ☐☐☐☐☐☐☐☐☐ 2 3 4 5 6 7 8 9 10
Agency ☐ 11
Project ☐☐ 12 13
Time ☐ 14
Year ☐☐ 15 16
Month ☐☐ 17 18
Parameter code ☐☐☐☐☐ 23 24 25 26 27
Method ☐☐ 28 29
Units ☐☐ 30 31
DP ☐ 32

Day		St	Hr	Rdg 1				Rdg 2				Rdg 3				Rdg 4				Rdg 5				Rdg 6				Rdg 7				Rdg 8				Rdg 9				Rdg 10				Rdg 11				Rdg 12			
19	20	21	22	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80

OMB No. 158-R0012
Approval Expires 6/30/76

Figure 3.4.2-a. SAROAD Hourly Data Form.

Time Interval Obs. - The required entry is self-explantory (1 hour, 2 hours, etc.) but a more detailed definition is given in Volume V, Section 4.3.0.

Units of Obs. - Enter the appropriate unit of measurement for observations from this site as specified in Volume V, Section 4.6.0.

Identification/Parameter Coding Section

State-Area-Site-Agency-Project - Enter the code numbers assigned to this site by EPA when Site Identification forms were orignially submitted. These combined codes provide a unique identification key and must remain constant for all data submitted from a particular site. They may be obtained from agency records, recently retrieved data, or from the most recent SAROAD Site Directory.

Time - Enter the sampling time interval code from Volume V, Section 4.3.0.

Year - Enter the last two digits of the calendar year in which the observations were taken.

Month - Enter the two-digit numeric code for the month in which the observation was taken. Months are coded 01 (January) through 12 (December).

Parameter Code - Enter the proper code from Volume V, Section 4.4.0.

Method - Enter the proper code from Volume V, Section 4.5.0. Additional method codes may be obtained from NADB.

Units - Refer to Volume V, Section 4.6.0, and enter the two-digit code which represents the units in which data values are expressed.

DP - Enter the number of significant digits to the right of the decimal point in the value entries. For example, to enter a reading of 0.125 ppm, enter "3" in the DP block and 0125 in the value column. The DP code in each column applies to all data values entered in that column.

Data Value Section

This section consists of 32 rows with a "Day" column, "ST HR" column, and 12 "Rdg" (Reading) columns of four positions each.

Day - Enter the calendar day of the month on which the reading occurred.

Start Hour - Enter the correct two-digit code for the start hour as determined from the matrix for Start-Hour Values given in Volume V, Section 4.7.0.

The start hour is when the sampling began in the standard time of that time zone. Only the start hours given are acceptable for each sampling interval. The acceptable start hours for 1-hour values are "00" (midnight) and "12" (noon). If the start hour for a specific sample is not in the table, a start hour for the sampling interval from the table must be utilized and the data value for the sample must be coded in the appropriate data value field. The missing data items must be left blank. Specific examples of assigning start hours and positioning of the first sample observations are given later in this section.

Data Value - All data value readings will be entered in the 12 columns headed "Rdg 1" through "Rdg 12." Listing of 1-hour values or observations for a month will require two copies of the form since two lines will be required for each day's observations. Line 1 would show "00" (midnight) for the start hour of the first day and would contain data values for the a.m. readings. Line 2 would show "12" (noon) as the start hour for that same day and would contain the p.m. readings. For 2-hour observations, only one line would be required for one day's readings. For greater than 2-hour observations, only the required number of columns would be completed for that day. Specific examples of assigning start hours and positioning of the first sample observations are given below.

These entries must be right justified. For missing data, leave the appointed space blank or enter 9999. Four zeros will be coded for observations below the minimum detectable. A left-justified minus sign will be entered for observations that are less than zero.

Summary

The instructions presented above are summerized in Figure 3.4.2-b.

EXAMPLES OF ASSIGNING START-HOUR AND LOCATING FIRST OBSERVATION

An agency has the option of choosing any hour within a day to start collecting data. This hour, however, may not be identical to the starting hour that should be recorded on the SAROAD form or the punched cards. The recorded starting hour is the time closest to midnight (00), but still the same day, at which the sampling could have begun and still have given an observation for the actual starting time. For instance, if a 3-hour sampling interval is used starting at

INPUT FORM: SAROAD Hourly Data Form SECTION:________ CARD NUMBER________

FIELD NAME	CARD COLUMN	FLD SIZE	DATA SOURCE	FIELD CONTENTS/DATA CALCULATIONS	COMMENTS
Time Interval of Obs.			Vol. V, Section 4.3.0	Time interval at which observation, readings are taken at this site.	
Units of Obs.			Vol. V, Section 4.6.0	Appropriate unit of measurement for observation from this site.	
State-Area-Site	2-10	9	EPA	State code, area code, and site code as assigned by EPA.	Unique key assigned by NADB; must remain constant.
Agency	11	1	Vol. V, Section 4.1.0	Agency type code for agency responsible for laboratory analysis.	Unique key assigned by NADB must remain constant.
Project (Code)	12-13	2	Vol. V, Section 4.2.0	Project Classification Code	Unique key assigned by NADB must remain constant.
Time	14	1	Vol. V, Section 4.3.0	Time Interval Code	
Year	15-16	2	Field Agency	Last two digits of year in which observation was made.	
Month	17-18	2	Field Agency	Two-digit numeric code for the month in which the observation was taken. 01 (January) through 12 (December)	
Agency			Field Agency	Name of the organization that operates this site.	
City Name			Field Agency	Name of area in which site is located if population is over 2500. If site located outside jurisdictional limits of an area of this size enter name of county in which site is located.	

Figure 3.4.2-b. SAROAD Hourly Data Form preparation guide.

INPUT FORM: SAROAD Hourly Data Form SECTION: ____________ CARD NUMBER ________

FIELD NAME	CARD COLUMN	FLD SIZE	DATA SOURCE	FIELD CONTENTS/DATA CALCULATIONS	COMMENTS
Site Address			Field Agency	Full street address of this site. If no street address, enter a descriptive phrase that will adequately locate this site. Do not enter city or county names already entered.	
Project (Description)			Vol. V, Section 4.2.0	Project classification description.	Enter description only, not code numbers.
Parameter Obs.			Field Agency	Name of the pollutant or meteorological parameter being measured. e.g., "Sulfur Dioxide," "Ambient Temperature."	
Method			Field Agency	Type of instrument and/or analytical method employed in the sampling at this site.	
Parameter Code	23-27	5	Vol. V, Section 4.4.0	Five-digit numeric code for the parameter observed.	
Method	28-29	2	Vol. V, Section 4.5.0	Two-digit numeric code for method of observation.	Additional codes can be obtained from EPA
Units	30-31	2	Vol. V, Section 4.6.0	Two-digit numeric code for units in which data values are expressed.	
DP	32	1	Field Agency	Number of significant digits to the right of the decimal point in data value entries.	If reading should be 0.025 PPM, enter "3" in DP and 0025 in data value.
Day	19-20	2		Calendar day of the month in which the reading occurred. Right justified, leading zeros (01, 02, etc.).	
ST HR	21-22	2	Vol. V, Section 4.7.0		
Data Values	33-80	4	Field Agency	Periodic data value readings entered in the proper columns with missing values blank.	

Figure 3.4.2-b (continued). SAROAD Hourly Data Form preparation guide.

8 a.m., the recorded starting time would be 2 a.m. (02). In recording the data values, the first two 4-digit data values would be skipped and the first recorded observation would begin in boxes (card columns) 41-44.

A convenient rule for calculating the starting hour to be recorded is to subtract the sampling time interval from the actual starting time until a value listed in the appropriate column in table "Matrix for Start Hour Values" in Volume V, Section 4.7.0, has been reached. This value is the appropriate starting value for that time interval. The number of times the time interval was subtracted equals the number of 4-digit values left blank on the SAROAD form (or punched card) before the first data point is entered. To help with this rather confusing item, two examples, along with appropriate illustrations of the completed SAROAD form, are presented below. For the illustrations, assume the sampling is on January 1 and 2, 1970, from the population-oriented station at site 012 in city 0960 in state 01 operated by the state agency.

Example 1

Consider an agency that begins sampling at 7 a.m. Sampling is done at a 2-hour interval on an AISI spot tape sampler yielding COH/1000 linear feet. To calculate the starting hour (ST HR) that must be recorded to satisfy the SAROAD format, first consult Volume V, Section 4.7.0, in the 2-hour column. Now, subtract 2 (the sampling interval) from 7 (a.m.) until one of the appropriate starting hours is reached. Only two possibilities are listed under 2-hour sampling: 00 and 01. Two is subtracted from 7 three times before 01 is reached. This now indicates two things: the recorded "ST HR" will be 01 (1 a.m.) and there will be three blank values before the first observation is entered. For the sake of the example, assume the values collected for a particular day were:

7 a.m. - 9 a.m. = 4.1
9 a.m. - 11 a.m. = 3.6
11 a.m. - 1 p.m. = 4.2
1 p.m. - 3 p.m. = 4.4
3 p.m. - 5 p.m. = 4.6
5 p.m. - 7 p.m. = 4.9
7 p.m. - 9 p.m. = 3.3
9 p.m. - 11 p.m. = 4.0
11 p.m. - 1 a.m. = 3.6

Now refer to Figure 3.4.2-c to see what the completed SAROAD form would look like for this day's data.

Note that in the space for decimal locator a "1" is entered to indicate one digit to the right of the decimal point.

Example 2

Consider an agency that for some reason does not start sampling until 10 a.m. on a particular day. Assume the pollutant code is 44901, the method code is 96, and the units are 07. Sampling is on a 6-hour interval. Therefore, subtract 6 from 10. This subtraction need be performed only once before an appropriate value, 04, is located in the 6-hour column in Volume V, Section 4.7.0. The recorded starting hour for the day is 04 and the number of blank values equals 1. For the sake of this example, assume the following data values:

10 a.m. - 4 p.m. = 1.04
4 p.m. - 10 p.m. = 0.96
10 p.m. - 4 a.m. = 0.99
4 a.m. - 10 a.m. = 1.12

Note that, although the 10 p.m. - 4 a.m. value runs into the next day, it will be listed with the same day. The next value (4 a.m. - 10 a.m.) will be recorded as the next day's first observation. The recorded starting hour for this next day will be 04, and the value will be located in the first value location. The decimal point for these data will be 2, and it would appear on the SAROAD form as indicated in Figure 3.4.2-d.

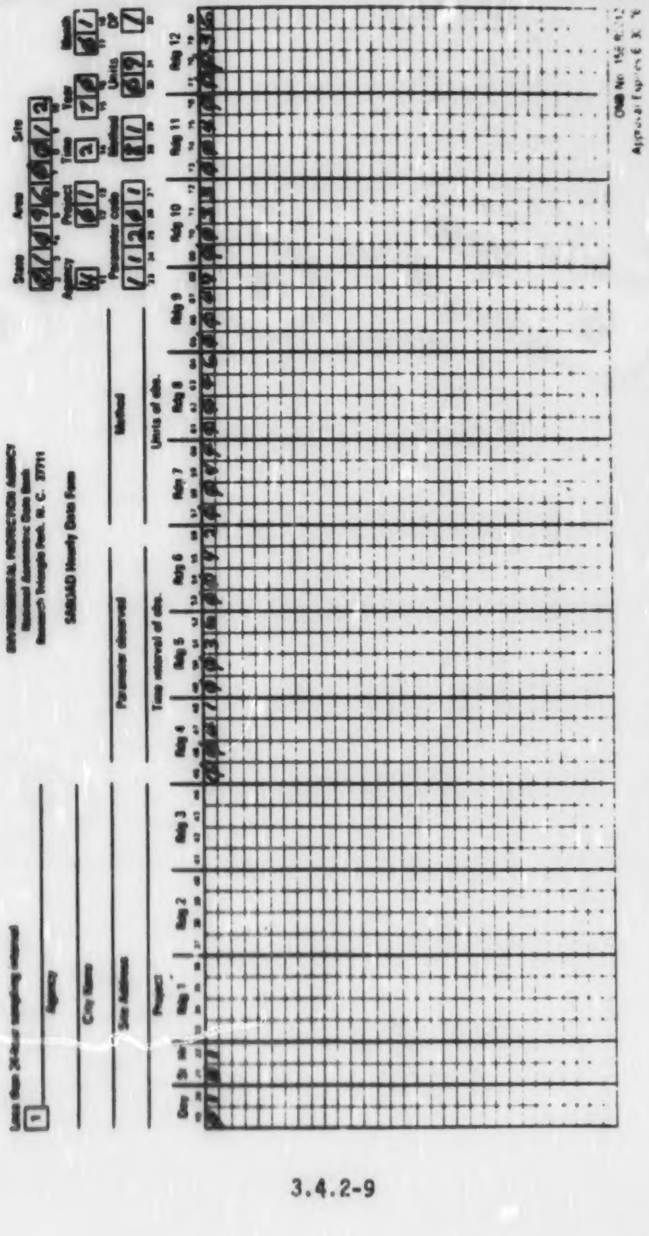
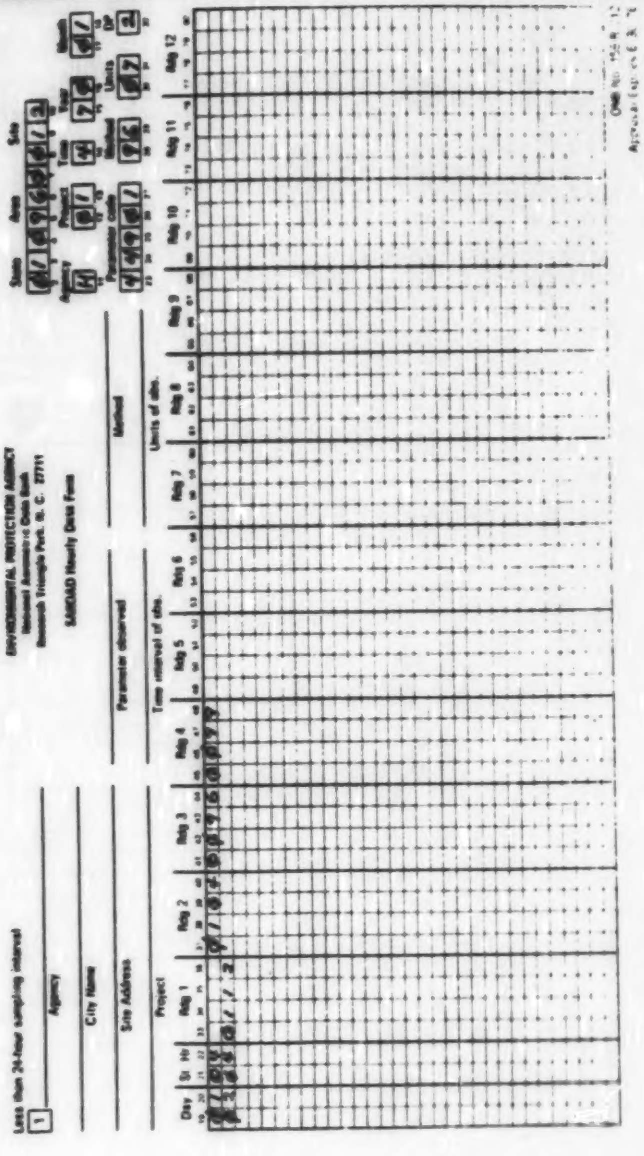


Figure 3.4.2-c. Example SAROAD Hourly Data Form for 2-hour sampling interval beginning at 7 a.m.



ENVIRONMENTAL PROTECTION AGENCY
SAROAD Hourly Data Form
Less than 24-hour sampling interval
Agency
City Name
Site Address
Project
Parameter observed
Time interval of obs.
Method
Units of obs.
State
Area
Site
Agency
Project
Time
Year
Month
Parameter code
Method
Units
DP
Day
St Hr
Rdg 1
Rdg 2
Rdg 3
Rdg 4
Rdg 5
Rdg 6
Rdg 7
Rdg 8
Rdg 9
Rdg 10
Rdg 11
Rdg 12

Figure 3.4.2-d. Example SAROAD Hourly Data Form for 6-hour sampling interval beginning at 10 a.m.

GENERAL

The Daily Data Form (Figure 3.4.3-a) is a month's record of up to four different parameters observed at a common site over periods of 24 hours or longer. This form is useful for 24-hour hi-vol or gas bubbler data that are observed daily, every third day, every sixth day, or on any other random schedule. One form can be used for up to four parameters as long as the site, time interval, year, month, and starting hour are the same.

FORM PREPARATION

The sampling site identification to be entered on this form should be the same as the corresponding information on the Site Identification Form for this site. Entries are made on the Daily Data Form as follows:

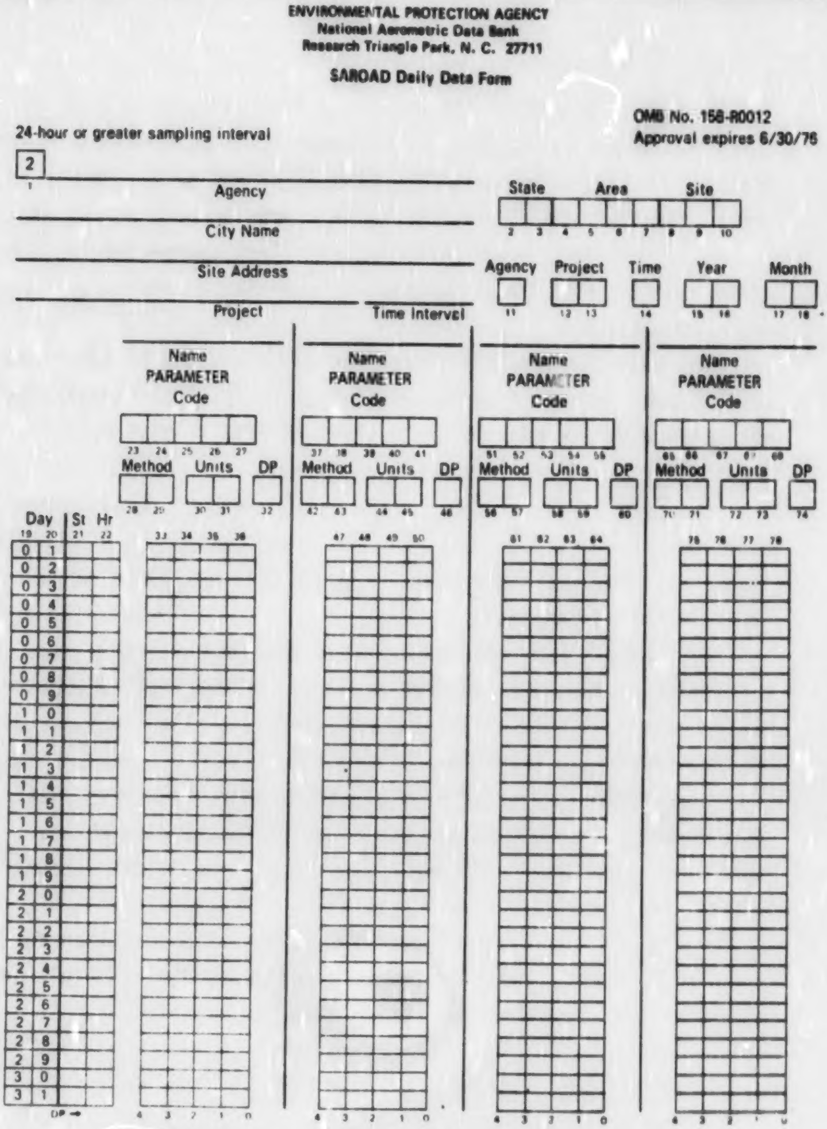
Identification Section

Agency - Enter the name of the city, county, region, state, or other agency that operates this site. This is the organization which is responsible for the laboratory analysis. Use whatever reasonable abbreviations are necessary to fully identify this organization.

City Name - Enter the name of the area in which this site is located if the population of that area is 2500 or more. If the site is located outside of the jurisdictional limits of an area of this size, enter the name of the county in which the site is located.

Site Address - Enter the full street address of this site. For areas that do not have a street address, enter a descriptive phrase that will serve to adequately locate the site. Do not repeat city, county, or state names already entered.

Project - Enter the project classification description for the site as given in Volume V, Section 4.2.0. Do not enter the two-digit code number preceding the classification description.



ENVIRONMENTAL PROTECTION AGENCY
National Aerometric Data Bank
Research Triangle Park, N. C. 27711

SAROAD Daily Data Form

OMB No. 158-R0012
Approval expires 6/30/76

24-hour or greater sampling interval

2 (1)

Agency

City Name

Site Address

Project

Time Interval

State (2 3) Area (4 5 6 7) Site (8 9 10)

Agency (11) Project (12 13) Time (14) Year (15 16) Month (17 18)

Name PARAMETER Code (23 24 25 26 27) Method (28 29) Units (30 31) DP (32) — 33 34 35 36

Name PARAMETER Code (37 38 39 40 41) Method (42 43) Units (44 45) DP (46) — 47 48 49 50

Name PARAMETER Code (51 52 53 54 55) Method (56 57) Units (58 59) DP (60) — 61 62 63 64

Name PARAMETER Code (65 66 67 68 69) Method (70 71) Units (72 73) DP (74) — 75 76 77 78

Day (19 20)	St (21)	Hr (22)
01		
02		
03		
04		
05		
06		
07		
08		
09		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		

DP → 4 3 2 1 0 4 3 2 1 0 4 3 2 1 0 4 3 2 1 0

Figure 3.4.3-a. SAROAD Daily Data Form.

State-Area-Site-Agency-Project - This code is a unique identification key assigned by EPA. These codes must be consistent for all data submitted for this sampling site. Enter the code numbers assigned to this site by EPA when Site Identification Forms were originally submitted. Agency and project codes are shown in Volume V, Section 4.1.0 and 4.2.0.

Time - Enter the appropriate code for the sampling time interval of observations from Volume V, Section 4.3.0.

Year - Enter the last two digits of the year in which the observation was taken.

Month - Enter the two-digit numeric code for the month in which the observation was taken; months are coded 01 (January) through 12 (December).

Parameter Section

There are four Parameter Sections on this form; each to be coded as follows

Parameter Name - Enter the name of the pollutant or meteorological paramete being measured, such as "Sulfur Dioxide" or "Ambient Temperature."

Parameter Code - Enter the proper code from Volume V, Section 4.4.0.

Method - Enter the proper code from Volume V, Section 4.5.0. Additional codes may be obtained from NADB.

Units - Refer to Volume V, Section 4.6.0, and enter the two-digit code which represents the units in which data values are expressed.

DP - Enter the number of significant digits to the right of the decimal point in the value entries. For example, to enter a reading of 0.125 ppm, enter "3" in the DP block and 0125 in the value column. The DP code in each column applies to all data values entered in that column.

Data Value Section

ST HR - Enter the actual starting hour when observations were begun. Starting hours are coded 00 (midnight) through 23 (11 p.m.). The start hour is when the sampling began in the standard time of that time zone. Be sure to make the first entry on the "Day" line corresponding to the actual day of the month on which observations were begun. Note that ST HR will apply to data values on the same "Day" line in all four parameters.

Data Value - Enter the observed data value in the space provided. This entry must be right justified. For missing data, invalid observations, or for days on which samples were not taken, leave the spaces blank. Four zeros will be entered for observations below the minimum detectable. Units of measure should be changed for observations having more than four significant digits. A left-justified minus sign will be entered for observations that are less than zero.

INPUT FORM: SAROAD Daily Data Form SECTION: ______ CARD NUMBER 2

FIELD NAME	CARD COLUMN	FLD SIZE	DATA SOURCE	FIELD CONTENTS/DATA CALCULATIONS	COMMENTS
Agency			Field Agency	Name of the organization that operates this site.	
City Name			Field Agency	Name of area in which site is located if population is over 2500. If site located outside jurisdictional limits of an area of this size enter name of county in which site is located.	
Site Address			Field Agency	Full street address of this site. If no street address enter a descriptive phrase that will adequately locate this site. Do not enter any city or county name already entered.	
Project (Description)			Vol. V, Section 4.2.0	Project classification description	Enter description only, not code number.
State-Area-Site	2-10	9	EPA	State code and area code from Vol. V, Section 4.1.0, site code as assigned by EPA.	Unique Key Fields assigned by EPA which must remain constant.
Agency	11	1	Vol. V, Section 4.1.0	Agency type code for agency responsible for laboratory analysis.	Unique key assigned by EPA which must remain constant.
Project (Code)	12-13	2	Vol. V, Section 4.1.0	Project classification code.	Unique key assigned by EPA which must remain constant.
Time	14	1	Vol. V, Section 4.3.0	Time interval code.	

Figure 3.4.3-b. SAROAD Daily Data Form preparation guide.

INPUT FORM: SAROAD Daily Data Form SECTION: ____________ CARD NUMBER ________

FIELD NAME	CARD COLUMN	FLD SIZE	DATA SOURCE	FIELD CONTENTS/DATA CALCULATIONS	COMMENTS
Year	15-16	2	Field Agency	Last two digits of year in which observation was made.	
Month	17-18	2	Field Agency	Two-digit numeric code for the month in which the observation was taken. 01 (January) through 12 (December)	
Parameter Name			Field Agency	Name of pollutant or meteorological parameter being measured. e.g., "Sulfur Dioxide", "ambient temperature".	Note possibility of four separate entries for this field.
Parameter Code	23-27 37-41 51-55 65-69	5	Vol. V, Section 4.4.0	Five-digit numeric code for the parameter observed.	Note possibility of four separate entries for this field.
Method	28-29 42-43 56-57 70-71	2	Vol. V, Section 4.5.0	Two-digit numeric code for method of observation.	Note possibility of four separate entries for this field.
Units	30-31 44-45 58-59 72-73	2	Vol. V, Section 4.6.0	Two-digit numeric code for units in which data values are expressed.	Note possibility of four separate entries for this field.
DP	32,46 60,74	1	Field Agency	Number of significant digits to the right of the decimal point in data value entries.	If reading should be 0.025 PPM, enter "3" in DP and 0025 in data value. Note 4 possible entries.
Day	19-20	2	Preprinted on form		Use only appropriate days. Leave remaining days blank.
ST HR	21-22	2	Field Agency	Code as actual sample start hour .	Note that ST HR refers to all parameters in the same day line.
Data Values	33-36 47-50 61-64 75-78	4	Field Agency	Periodic data value readings entered in the proper columns for the applicable parameters.	Note 4 possible entries for the same day.

Figure 3.4.3-b (continued). SAROAD Daily Data Form preparation guide.

GENERAL

The Composite Data Form (Figure 3.4.4-a) is used for recording those values resulting from analyses of a solution containing a number of individual samples that have been chemically combined or "composited." In analyzing for the hi-vol particulate fractions, only a portion of the filter is available. On a small amount of the filter it is possible that not enough of a pollutant is present to be detected. By combining all the filters for a month or quarter, it is possible to determine a value of the pollutant for that time period by analyzing the composite. A significant savings in manpower results from compositing. Since each composite usually combines portions of 5 to 10 individual filters, analysis of the composite provides an approximate value that in effect eliminates the need for 5 to 10 analyses. The Composite Data Form is not meant to supersede the Daily Data Form. Its use should be confined to those applications which will provide the greatest cost effectiveness in the recording of data.

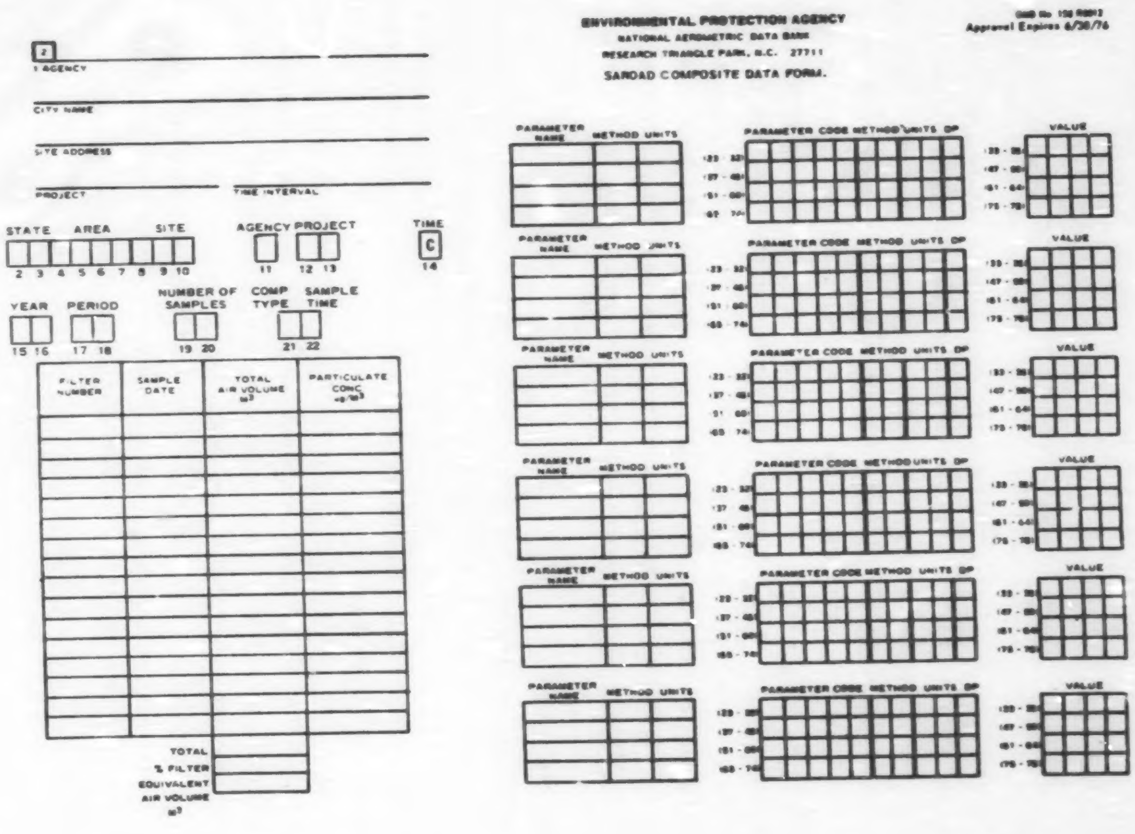
FORM PREPARATION

Identification Section

Agency - Enter the name of the city, county, region, state, or other agency that operates this site. This is the organization which is responsible for the laboratory analysis. Use whatever reasonable abbreviations are necessary to fully identify the organization.

City Name - Enter the name of the area in which this site is located if the population of that area is 2500 or more. If the site is located outside the jurisdictional limits of an area of this size, enter the name of the county in which the site is located or the county equivalent.

Site Address - Enter the full street address of this site. For areas that don't have a street address, enter a descriptive phrase that will serve to adequately locate the site. Do not repeat city, county, or state names already entered.



ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AEROMETRIC DATA BANK
RESEARCH TRIANGLE PARK, N.C. 27711
SAROAD COMPOSITE DATA FORM.

OMB No. 158 R0012
Approval Expires 6/30/76

2 1 AGENCY ____________
CITY NAME ____________
SITE ADDRESS ____________
PROJECT ____________ TIME INTERVAL ____________

STATE ☐☐ (2 3) AREA ☐☐☐☐ (4 5 6 7) SITE ☐☐☐ (8 9 10)
AGENCY ☐ (11) PROJECT ☐☐ (12 13)
TIME C (14)
YEAR ☐☐ (15 16) PERIOD ☐☐ (17 18)
NUMBER OF SAMPLES ☐☐ (19 20)
COMP TYPE SAMPLE TIME ☐☐ (21 22)

FILTER NUMBER	SAMPLE DATE	TOTAL AIR VOLUME m³	PARTICULATE CONC µg/m³

TOTAL ☐
% FILTER ☐
EQUIVALENT AIR VOLUME m³ ☐

PARAMETER NAME | METHOD | UNITS
PARAMETER CODE | METHOD | UNITS | DP — (23 - 32) (37 - 46) (51 - 60) (65 - 74)
VALUE — (33 - 36) (47 - 50) (61 - 64) (75 - 78)

PARAMETER NAME | METHOD | UNITS
PARAMETER CODE | METHOD | UNITS | DP — (23 - 32) (37 - 46) (51 - 60) (65 - 74)
VALUE — (33 - 36) (47 - 50) (61 - 64) (75 - 78)

PARAMETER NAME | METHOD | UNITS
PARAMETER CODE | METHOD | UNITS | DP — (23 - 32) (37 - 46) (51 - 60) (65 - 74)
VALUE — (33 - 36) (47 - 50) (61 - 64) (75 - 78)

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VALUE — (33 - 36) (47 - 50) (61 - 64) (75 - 78)

PARAMETER NAME | METHOD | UNITS
PARAMETER CODE | METHOD | UNITS | DP — (23 - 32) (37 - 46) (51 - 60) (65 - 74)
VALUE — (33 - 36) (47 - 50) (61 - 64) (75 - 78)

PARAMETER NAME | METHOD | UNITS
PARAMETER CODE | METHOD | UNITS | DP — (23 - 32) (37 - 46) (51 - 60) (65 - 74)
VALUE — (33 - 36) (47 - 50) (61 - 64) (75 - 78)

Figure 3.4.4-a. SAROAD Composite Data Form.

Project - Enter the project classification description for the site as given in Volume V, Section 4.2.0. Do not enter the two-digit code number preceding the classification description.

Time Interval - Enter the appropriate name of the period of time during which the observations recorded on this form were taken (e.g., annual - 19xx; quarterly - 1, 2, etc; seasonal - spring, fall, etc.; monthly - January, February, etc.; weekly - 1, 2, etc.).

Identification Coding Section

State-Area-Site-Agency-Project - Enter the code numbers assigned to this site by EPA when Site Identification Forms were originally submitted. These combined codes provide a unique identification key and must remain constant for all data submitted from a particular site. Agency codes and project codes are listed in Volume V, Sections 4.1.0 and 4.2.0.

Time - Note the preprinted "C" in this block. This indicates that this is a composite data submission, and no further entry is required.

Year - Enter the last two digits of the year in which observations were taken.

Period - See Volume V, Section 4.9.0.

Number of Samples - Enter the number of samples that were composited.

Comp. Type - See Volume V, Section 4.10.0.

Sample Time - See Volume V, Section 4.3.0.

Individual Sample Section

This section allows for the recording of pertinent data for 16 individual samples. Data are entered as indicated on the form.

Parameter Identification Section

A total of 24 parameters can be coded on each form. There are six parameter identification sections on the form with space for four parameters in each section. Each space will be completed as follows:

Parameter Name - Enter the name of the pollutant or meteorological parameter being measured, such as "lead" or "sulfate." Reasonable abbreviations may be used.

Method - Enter the type of instrument and/or analytical method employed in the sampling at this site. Reasonable abbreviations may be used.

Units - Enter the appropriate unit of measurement for this observation. See Volume V, Section 4.6.0. Reasonable abbreviations may be used.

Parameter Coding/Value Entry Section

There are six of these sections on the form; code to be completed as follows:

Parameter Code - Enter the proper code from Volume V, Section 4.4.0.

Method - Enter the proper code from Volume V, Section 4.5.0.

Units - Enter the proper code from Volume V, Section 4.6.0, which represents the units in which data values are expressed.

DP - Enter the number of significant digits to the right of the decimal point in the value entry for this reading. For example, to enter a reading of 0.025 ppm, enter "3" in "DP" and "0025" in the value blocks.

Value - Enter the observed data value in the space provided. This entry must be right justified with leading zeros. Do not enter decimal points. Four zeros will be entered for observations below the minimum detectable.

SUBMISSION OF COMPOSITE DATA FORMS

Submission of Composite Data Forms and/or card data produced from the forms is made on a quarterly basis as defined in the most current applicable Federal Register.

INPUT FORM: SAROAD Composite Data Form SECTION:__________ CARD NUMBER__________

FIELD NAME	CARD COLUMN	FLD SIZE	DATA SOURCE	FIELD CONTENTS/DATA CALCULATIONS	COMMENTS
Agency			Field Agency	Name of the organization that operates this site.	
City Name			Field Agency	Name of area in which site is located if population is over 2500. If site is located outside jurisdictional limits of an area of this size enter name of county in which site is located.	
Site Address			Field Agency	Full street address for this site or brief descriptive phrase that will adequately locate the site.	
Project			Vol. V, Section 4.2.0	Project classification description	Enter description only, not code number.
Time Interval			Field Agency	Time period during which the observations were taken.	annual, quarterly, seasonal, etc.
State	2-3	2	EPA	Two-digit numeric code for the state in which the site is located.	Unique key fields assigned by NADB which must remain constant
Area	4-7	4	EPA	Four-digit numeric code for the area in which the site is located.	Assigned by NADB
Site	8-10	3	EPA	Theee-digit numeric code for this site	Assigned by NADB
Agency	11	1	Vol. V, Section 4.1.0	Agency type code	Assigned by NADB
Project	12-13	2	Vol. V, Section 4.2.0	Project classification code	Assigned by NADB
Time	14	1	Preprinted	"C"	

Figure 3.4.4-b. SAROAD Composite Data Form preparation guide.

INPUT FORM: SAROAD Composite Data Form SECTION: ________ CARD NUMBER ____

FIELD NAME	CARD COLUMN	FLD SIZE	DATA SOURCE	FIELD CONTENTS/DATA CALCULATIONS	COMMENTS
Year	15-16	2	Field Agency	Last two digits of year in which observations were taken.	
Period	17-18	2	Vol. V, Section 4.9.0	Two-digit code for time interval during which observations were taken.	
Number of Samples	19-20	2	Field Agency	Number of samples that were composited (01-99)	
Comp. Type	21	1	Vol. V, Section 4.10.0	Composite type code	
Sample Time	22	1	Vol. V, Section 4.3.0	Time interval code of the samples that make up the composite.	
Filter Number			Field Agency	Number of the filter(s) used in this compository.	
Sample Date			Field Agency	Date this sample was taken	
Total Air Volume			Field Agency	Total estimated air volume passing through this filter from installation to data of sample. expressed in cubic meters (m^3)	
Particulate Conc.			Field Agency	Amount of particulate concentration per cubic meter of air detected at this filter.	
Total			Field Agency	Total estimated air volume passing through all filters listed.	
% Filter			Field Agency	Percent of filter surface available for hi-vol particulate fraction (average of all filters listed).	

Figure 3.4.4-b. (continued). SAROAD Composite Data Form preparation guide.

INPUT FORM: SAROAD Composite Data Form SECTION:________ CARD NUMBER______

FIELD NAME	CARD COLUMN	FLD SIZE	DATA SOURCE	FIELD CONTENTS/DATA CALCULATIONS	COMMENTS
Equivalent Air Volume			Field Agency	Total Air volume x % Filter.	
Parameter Name			Field Agency	Name of pollutant or meteorological parameter being measured. Reasonable abbreviations may be used.	
Method			Field Agency	Type of instrument and/or analytical method employed in the sampling at this site. Reasonable abbreviations may be used.	
Units			Vol. V, Section 4.6.0	Appropriate unit of measurement for this observation.	
Parameter Code	23-27 37-41 51-55 65-69	5	Vol. V, Section 4.4.0	Five-digit numeric code for the parameter observed.	
Method	28-29 42-43 56-57 70-71	2	Vol. V, Section 4.5.0	Two-digit numeric code for method of observation.	
Units	30-31 44-45 58-59 72-73	2	Vol. V, Section 4.6.0	Two-digit numeric code for units in which data values are expressed.	
DP	32 46 60 74	1	Field Agency	Number of significant digits to the right of the decimal point in data value entries.	
Value	33-36 47-50 61-64 75-78	4	Field Agency	Data value for this parameter.	

Figure 3.4.4-b (continued). SAROAD Composite Data Form preparation guide.

GENERAL

The Multiple Parameter Data Form (Figure 3.4.5-a) can be used to record any data with a sampling interval of 24 hours or greater, but its main advantage is that one form can accommodate 24 parameters. This form can be used for recording values when a hi-vol filter is analyzed for a number of subfractions and provides space to record a filter number (for cross-reference) and air volume.

FORM PREPARATION

Identification Section

Agency - Enter the name of the city, county, region, state, or other agency that operates this site. This is the organization to which any questions concerning the data entered on this form will be directed. Use whatever reasonable abbreviations are necessary to fully identify this organization.

City Name - Enter the name of the area in which this site is located if the population of that area is 2500 or more. If the site is located outside the jurisdictional limits of an area of this size enter the name of the county in which the site is located or county equivalent.

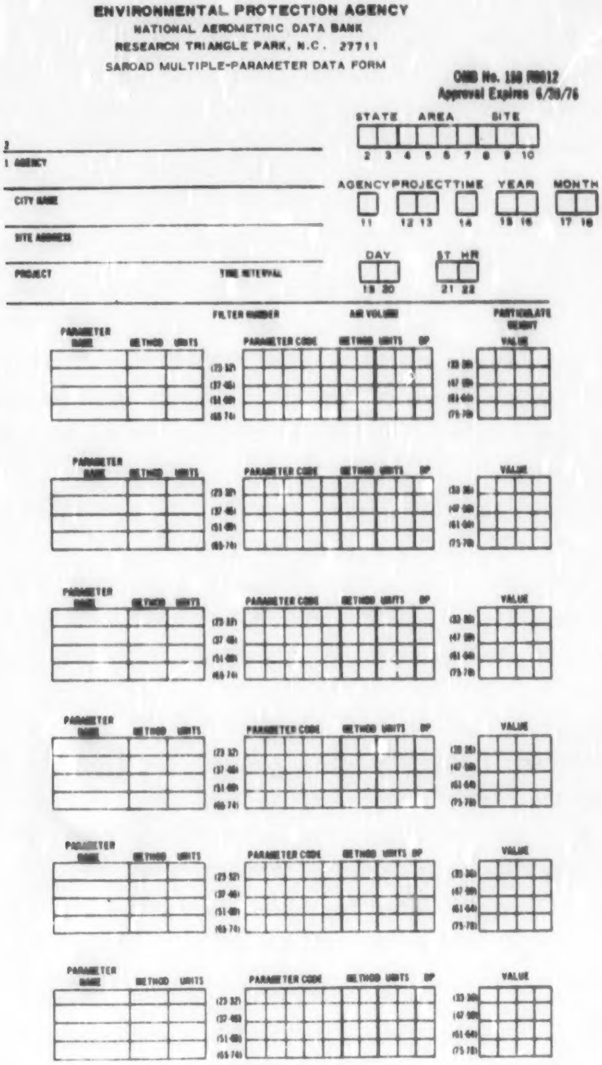
Site Address - Enter the full street address of this site. For areas that do not have a street address enter a descriptive phrase that will serve to adequately locate the site. Do not repeat city, county, or state names already entered.

Project - Enter the project classification description for this site as given in Volume V, Section 4.2.0. Do not enter the two-digit code number preceding the classification description.

Time Interval - Enter the sampling interval over which observations were made at this site (e.g., 1 week, 2 weeks, 1 month).

Filter Number - Enter the number of the filter used at this site.

Air Volume - Enter the estimated volume of air that has passed through this filter during the sampling period. Cubic meters (m^3) is the preferred unit of measure.



ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AEROMETRIC DATA BANK
RESEARCH TRIANGLE PARK, N.C. 27711
SAROAD MULTIPLE-PARAMETER DATA FORM

OMB No. 158 R0012
Approval Expires 6/30/76

STATE AREA SITE ☐☐☐☐☐☐☐☐☐ (2 3 4 5 6 7 8 9 10)

1 AGENCY

CITY NAME

SITE ADDRESS

PROJECT TIME INTERVAL

AGENCY ☐ (11) PROJECT ☐☐ (12 13) TIME ☐ (14) YEAR ☐☐ (15 16) MONTH ☐☐ (17 18)

DAY ☐☐ (19 20) ST HR ☐☐ (21 22)

FILTER NUMBER AIR VOLUME PARTICULATE WEIGHT

PARAMETER NAME METHOD UNITS (23-32) (37-46) (51-60) (65-74) PARAMETER CODE METHOD UNITS DP (33-36) (47-50) (61-64) (75-78) VALUE

PARAMETER NAME METHOD UNITS (23-32) (37-46) (51-60) (65-74) PARAMETER CODE METHOD UNITS DP (33-36) (47-50) (61-64) (75-78) VALUE

PARAMETER NAME METHOD UNITS (23-32) (37-46) (51-60) (65-74) PARAMETER CODE METHOD UNITS DP (33-36) (47-50) (61-64) (75-78) VALUE

PARAMETER NAME METHOD UNITS (23-32) (37-46) (51-60) (65-74) PARAMETER CODE METHOD UNITS DP (33-36) (47-50) (61-64) (75-78) VALUE

PARAMETER NAME METHOD UNITS (23-32) (37-46) (51-60) (65-74) PARAMETER CODE METHOD UNITS DP (33-36) (47-50) (61-64) (75-78) VALUE

PARAMETER NAME METHOD UNITS (23-32) (37-46) (51-60) (65-74) PARAMETER CODE METHOD UNITS DP (33-36) (47-50) (61-64) (75-78) VALUE

Figure 3.4-5-a. SAROAD Multiple-Parameter Data Form.

Particulate Weight - Enter the weight of particulate matter collected on the filter.

Identification Coding Section

State-Area-Site-Agency-Project - Enter the code numbers assigned to this site by EPA when Site Identification Forms were originally submitted. These combined codes provide a unique identification key and must remain constant for all data submitted for a particular site. Agency codes and project codes are listed in Volume V, Sections 4.1.0 and 4.2.0.

Time - Enter the code from Volume V, Section 4.3.0, that identifies the time interval over which these observations were taken.

Year - Enter the last two digits of the year in which observations were taken.

Month - Enter the numeric equivalent of the month in which the observations were taken (01 - January through 12 - December).

Day - Enter the two-digit day of the month on which observations began (e.g., 01 - 31). All data entered on a form must represent the same sampling period.

ST HR - Enter the actual starting hour when observations were begun. Starting hours are coded 00 (midnight) through 23 (11 p.m.). The start hour is when the sampling began in the standard time of that time zone.

Parameter Identification Section

Note that the form allows for the recording of data values for 24 individual parameters; each of which is coded as follows:

Parameter Name - Enter the name of the pollutant or meteorological parameter being measured. Reasonable abbreviations may be used.

Method - Enter the type of instrument and/or analytical method employed in the sampling at this site. Reasonable abbreviations may be used.

Units - Enter the appropriate unit of measurement for this observation. See Volume V, Section 4.6.0. Reasonable abbreviations may be used.

Parameter Coding/Value Entry Section

Note that the form allows for the recording of data values for 24 individual parameters; each of which is coded as follows:

Parameter Code - Enter the proper code from Volume V, Section 4.4.0.

Method - Enter the proper code from Volume V, Section 4.5.0.

Units - Enter the proper code from Volume V, Section 4.6.0, which represents the units in which data values are expressed.

DP - Enter the number of significant digits to the right of the decimal point in the value entry for this reading. For example, to enter a reading of 0.025 ppm, enter a "3" in "DP" and "0025" in the value blocks.

Value - Enter the observed data value in the space provided. This entry must be right justified with leading zeros. Do not enter decimal points. Four zeros will be entered for values below the minimum detectable.

SUBMISSION OF MULTIPLE PARAMETER DATA FORM

SAROAD Multiple Parameter Data Forms and/or card data are submitted to EPA periodically as per instructions set forth in the Federal Register.

INPUT FORM: SAROAD Multiple Parameter Data Form SECTION: ________ CARD NUMBER ________

FIELD NAME	CARD COLUMN	FLD SIZE	DATA SOURCE	FIELD CONTENTS/DATA CALCULATIONS	COMMENTS
Agency			Field Agency	Name of the organization that operates this site.	
City Name			Field Agency	Name of area in which site is located if population is over 2500. If site is located outside jurisdictional limits of an area of this size, enter name of county in which site is located.	
Site Address			Field Agency	Full street address for this site or brief descriptive phrase that will adequately locate the site.	
Project			Vol. V, Section 4.2.0	Project classification description	Enter description only, not code number.
Time Interval			Field Agency	Period of time over which observations were made at this site.	
Filter Number			Field Agency	Number of the filter used at this site.	
Air Volume			Field Agency	Estimated volume of air that has passed through the filter during the sampling period. Expressed in cubic meters (m^3).	
Particulate Weight			Field Agency	Weight of particulate matter gathered at this site.	
State Code	2-3	2	EPA	Two-digit numeric code for the state in which the site is located.	

Figure 3.4.5-b. SAROAD Multiple-Parameter Data Form preparation guide.

INPUT FORM: SAROAD Multiple Parameter Data Form (cont.) SECTION:__________ CARD NUMBER________

FIELD NAME	CARD COLUMN	FLD SIZE	DATA SOURCE	FIELD CONTENTS/DATA CALCULATIONS	COMMENTS
Area Code	4-7	4	EPA	Four-digit numeric code for the area in which the site is located.	Assigned by NADB
Site Code	8-10	3	EPA	Three-digit numeric code for this site.	Assigned by NADB
Agency Code	11	1	Vol. V, Section 4.1.0	Agency type code	Assigned by NADB
Project Code	12-13	2	Vol. V, Section 4.2.0	Project classification code	Assigned by NADB
Time Code	14	1	Vol. V, Section 4.3.0	Time interval code.	
Year	15-16	2	Field agency	Last two digits of year in which observations were taken.	
Month	17-18	2	Field Agency	Two-digit numeric code for the month in which observations were taken. January (01) through December (12).	
Day	19-20	2	Field Agency	Two-digit day of the month on which observations began (01-31).	
ST HR	21-22	2	Field Agency	Start hour value for these observations.	
Parameter Name			Vol. V, Section 4.4.0	Name of pollutant or meteorological parameter being observed. Reasonable abbreviations may be used.	

Figure 3.4.5-b (continued). SAROAD Multiple-Parameter Data Form preparation guide.

INPUT FORM: SAROAD Multiple Parameter Data Form (Cont.) SECTION:__________ CARD NUMBER________

FIELD NAME	CARD COLUMN	FLD SIZE	DATA SOURCE	FIELD CONTENTS/DATA CALCULATIONS	COMMENTS
Method			Field Agency	Type of instrument and/or analytical method employed in the sampling at this site. Reasonable abbreviations may be used.	
Units			Vol. V, Section 4.6.0	Appropriate unit of measurement for observations taken at this site.	
Parameter Code	23-27 37-41 51-55 65-69	5	Vol. V, Section 4.4.0	Five-digit numeric code for the parameters observed.	
Method Code	28-29 42-43 56-57 70-71	2	Vol. V, Section 4.5.0	Two-digit numeric code for method of observation.	
Units Code	30-31 44-45 58-59 72-73	2	Vol. V, Section 4.6.0	Two-digit numeric code for units in which data values are expressed.	
DP	32, 46, 60, 74	1	Field Agency	Number of significant digits to the right of the decimal point in data value entries.	
Value	33-36 47-50 61-64 75-78	4	Field Agency	Data values for each parameter. Right justified, leading zeros. Do not enter decimal point.	

Figure 3.4.5-b (continued). SAROAD Multiple-Parameter Data Form Preparation guide.

GENERAL

The SAROAD Multiple-Station Form (Figure 3.4.6-a) is designed for recording data obtained at a sampling interval of 24 hours or greater for one parameter for up to 12 different sampling sites. A control agency operating a network of 30 dustfall buckets, for example, could use three of these forms, as opposed to using thirty daily forms to record a month's data.

FORM PREPARATION

Identification Section

Agency - Enter the name of the city, county, region, state, or other agency that operates these sites. This is the organization which is responsible for the laboratory analysis. Use whatever reasonable abbreviations are necessary to fully identify this organization.

Parameter Observed - Enter the name of the pollutant or the meteorological parameter being measured, such as "Sulfur Dioxide" or "Ambient Temperature."

Time Interval - Enter the appropriate name of the time period during which the observations recorded on this form were taken (e.g., daily, weekly, etc.).

Method - Enter the type of instrument and/or analytical method employed in the sampling at these sites. Reasonable abbreviations may be used.

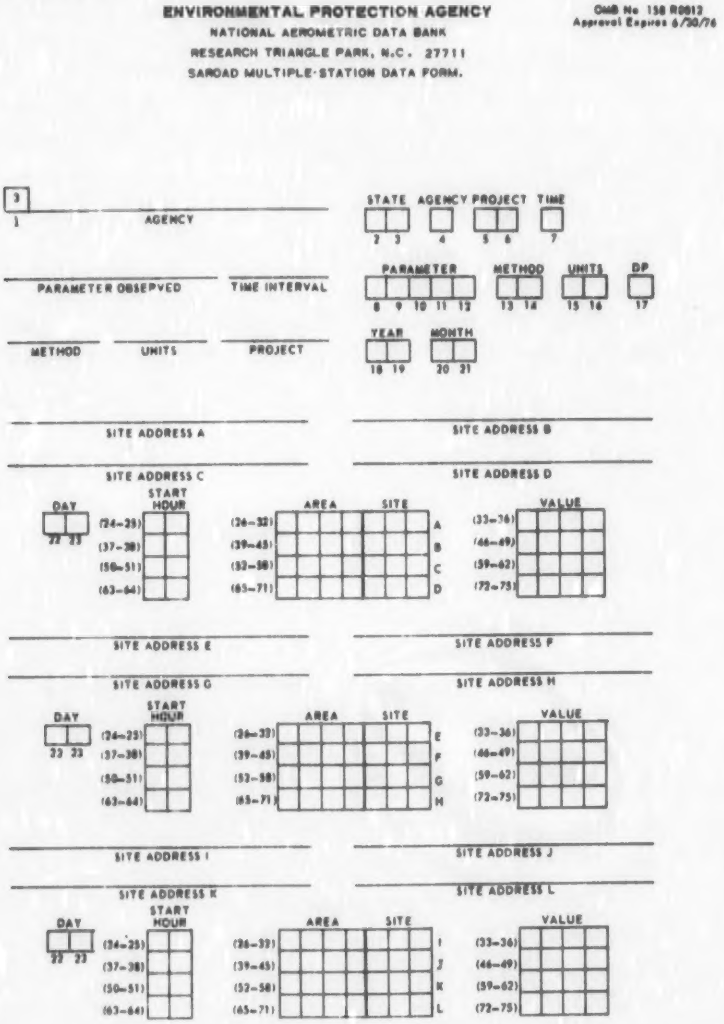
Units - Enter the appropriate unit of measurement for this observation.

Project - Enter the project classification description for these sites as given in Volume V, Section 4.2.0. Do not enter the two-digit code number preceding the classification description.

Identification Coding Section

State - Enter the appropriate state code from Volume V, Section 2.1.0, that identifies the state in which these sites are located. Note that all site data recorded on this form must be from one state.

Agency - Enter the Agency code assigned by EPA which identifies the type of agency responsible for the laboratory analysis. See Volume V, Section 4.1.0.



ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AEROMETRIC DATA BANK
RESEARCH TRIANGLE PARK, N.C. 27711
SAROAD MULTIPLE-STATION DATA FORM.

OMB No 158 R0012
Approval Expires 6/30/76

3 (1) AGENCY

STATE (2 3) AGENCY (4) PROJECT (5 6) TIME (7)

PARAMETER OBSERVED

TIME INTERVAL

PARAMETER (8 9 10 11 12) METHOD (13 14) UNITS (15 16) DP (17)

METHOD

UNITS

PROJECT

YEAR (18 19) MONTH (20 21)

SITE ADDRESS A

SITE ADDRESS B

SITE ADDRESS C

SITE ADDRESS D

DAY (22 23)

START HOUR		AREA SITE			VALUE
(24–25)		(26–32)	A	(33–36)	
(37–38)		(39–45)	B	(46–49)	
(50–51)		(52–58)	C	(59–62)	
(63–64)		(65–71)	D	(72–75)	

SITE ADDRESS E

SITE ADDRESS F

SITE ADDRESS G

SITE ADDRESS H

DAY (22 23)

START HOUR		AREA SITE			VALUE
(24–25)		(26–32)	E	(33–36)	
(37–38)		(39–45)	F	(46–49)	
(50–51)		(52–58)	G	(59–62)	
(63–64)		(65–71)	H	(72–75)	

SITE ADDRESS I

SITE ADDRESS J

SITE ADDRESS K

SITE ADDRESS L

DAY (22 23)

START HOUR		AREA SITE			VALUE
(24–25)		(26–32)	I	(33–36)	
(37–38)		(39–45)	J	(46–49)	
(50–51)		(52–58)	K	(59–62)	
(63–64)		(65–71)	L	(72–75)	

Figure 3.4.6-a. SAROAD Multiple-Station Data Form.

Project - Enter the two-digit project code assigned by NADB. See Volume V, Section 4.2.0.

Time - Enter the appropriate sampling time interval code from Volume V, Section 4.3.0.

Parameter Code - Enter the proper code from Volume V, Section 4.4.0.

Method - Enter the proper code from Volume V, Section 4.5.0.

Units - Enter the proper code from Volume V, Section 4.6.0, which represents the units in which data values are expressed.

DP - Enter the number of significant digits to the right of the decimal point in the value entries. For example, to enter a reading of 0.025 ppm, enter "3" in "DP" and 0025 in the value blocks. Note that all values entered on this form must have the same number of significant digits to the right of the decimal point.

Year - Enter the last two digits of the year in which the observations were made.

Month - Enter the two-digit numeric equivalent of the month in which observations were made as January (01) through December (12). Note that all observations recorded on this form must have occurred in the same month.

Site Address Sections

For each of the 12 possible site address entries (A-L), enter the full street address of the site. For areas that do not have a street address, enter a descriptive phrase that will serve to adequately locate the site.

Site Data Sections

Day - Enter the day of the month on which sampling occurred or began in two digits, 01 - 31.

Start Hour - Enter the actual starting hour when observations were begun. Starting hours are coded 00 (midnight) through 23 (11 p.m.). The start hour is is when the sampling began in the standard time of that time zone.

Area-Site - Enter the area and site codes for the individual sampling station as assigned by EPA when Site Identification Forms were initially submitted.

Value - Enter the data value for the reading at this site. This entry must be right justified with leading zeros. Do not enter decimal points. Four zeros will be entered for observations below the minimum detectable.

SUBMISSION OF MULTIPLE STATION DATA FORMS

Submission of completed Multiple Station Data Forms and/or card data will be made in accordance with directions contained in the Federal Register.

INPUT FORM: SAROAD Multiple Station Data Form SECTION: ____________ CARD NUMBER ________

FIELD NAME	CARD COLUMN	FLD SIZE	DATA SOURCE	FIELD CONTENTS/DATA CALCULATIONS	COMMENTS
Agency			Field Agency	Name of the organization that operates this site.	
Parameter Observed			Vol. V, Section 4.4.0	Name of the pollutant or meteorological parameter observed.	
Time Interval			Field Agency	Time period during which the observations were taken.	
Method			Field Agency	Type of instrument and/or analytical method employed in the sampling at these sites.	
Units			Field Agency	Appropriate unit of measurement for observations taken at this site.	
Project			Vol. V, Section 4.2.0	Project classification description	Enter description, not code number.
State	2-3	2	Vol. V, Section 2.1.0	Two-digit numeric code for the state in which these sampling sites are located.	
Agency Code	4	1	Vol. V, Section 4.1.0	Agency type code	Assigned by NADB
Project Code	5-6	2	Vol. V, Section 4.2.0	Project classification code	Assigned by NADB
Time Code	7	1	Vol. V, Section 4.3.0	Time interval code	

Figure 3.4.6-b. SAROAL Multiple-Station Data Form preparation guide.

INPUT FORM: SAROAD Multiple Station Data Form (Cont.) SECTION: ____________ CARD NUMBER ________

FIELD NAME	CARD COLUMN	FLD SIZE	DATA SOURCE	FIELD CONTENTS/DATA CALCULATIONS	COMMENTS
Parameter Code	8-12	5	Vol. V, Section 4.4.0	Five-digit numeric code for the parameter observed.	
Method Code	13-14	2	Vol. V, section 4.5.0	Two-digit numeric code for method of observation	
Units Code	15-16	2	Vol. V, Section 4.6.0	Two-digit numeric code for units in which data values are expressed.	
DP	17	1	Field Agency	Number of significant digits to the right of the decimal point in data value entries.	
Year	18-19	2	Field Agency	Last two digits of the year in which observations were taken.	
Month	20-21	2	Field Agency	Two-digit numeric code for the month in which observations were taken, January (01) through December (12).	
Site Address			Field Agency	Full street address of the site or brief descriptive phrase that will serve to adequately locate the site.	
Day	22-23	2	Field Agency	Day of the month on which sampling occurred or began (01-31).	
Start Hour	24-25 37-38 50-51 63-64	2	Field Agency	Start hour value for each site recorded.	

Figure 3.4.6-b (continued). SAROAD Multiple-Station Data Form preparation guide.

INPUT FORM: SAROAD Multiple Station Data Form (Cont.) SECTION: ______ CARD NUMBER ______

FIELD NAME	CARD COLUMN	FLD SIZE	DATA SOURCE	FIELD CONTENTS/DATA CALCULATIONS	COMMENTS
Area	26-29 39-42 52-55 65-68	4	Vol. V, Section 2.2.0	Area Code assigned by EPA	
Site	30-32 43-45 56-58 69-71	3	EPA	Site code assigned by EPA	
Value	33-36 46-49 59-62 72-75	4	Field Agency	Data value for reading at this site. Right justified, leading zeros. Do not enter decimal points.	

Figure 3.4.6-b (continued). SAROAD Multiple-Station Data Form preparation guide.

Procedures for the Addition and/or Revisions to the SAROAD Parameter-Method File

Because of technical advances in the fields of chemistry, instrumentation, and ambient air monitoring techniques, periodic revisions and additions are necessary to the SAROAD method codes.

Unique method codes are assigned for each pollutant sampling technique depending on both the method of collection and method of analysis. The method of collection refers to the media used to obtain a representative sample and could include a high volume sampler for suspended particulate matter, a gas bubbler for 24-hour gas sampling, an instrument for continuous sampling, or a dust bucket for collecting settled particulate for a 30-day sampling period. The method of analysis refers to the laboratory or analytical technique utilized to reduce the collected sample to data and includes the specific chemical principal (i.e., colorimetric, conductimetric, coulometric) or the specific analytical method (i.e., NASN Sodium Arsenite-Orifice).

For each pollutant, a standard unit code is assigned for all method codes. Data can be submitted for update in any of the several unit codes, but all reports except raw data listings are generated in the standard units.

As new instrumentation is purchased or new analytical techniques are developed, the agency or laboratory should review the Parameter-Method File as given in Volume V, Section 4.5.0. If the file does not contain the specific method and if the data are going to be reported to SAROAD, the form, "Request for Assignment of New SAROAD Method Code", given in Figure 3.4.7-a, should be completed and forwarded to the SAROAD Contact in the appropriate Regional Office. In addition to completing the form, a copy of the analytical method or instrument operating manual should be enclosed. The form will be forwarded to NADB by the Regional Office, the request will be evaluated, and if appropriate, a new method code will be assigned. The Regional Office will be informed, and Volume V will be updated.

Request for Assignment of New SAROAD Method Code

Requesting Agency________________________________Date_______________

Person to Call in Case of Questions________________Telephone___________

1. List pollutant name and SAROAD Code:
2. List equipment and method of collection (manufacturer & type):
3. List equipment and method of analysis (manufacturer & type):
4. List range of measured values:
    a. Urban________
    b. Non-Urban_________
5. List minimum detectable & how it was obtained:
    a. Urban________
    b. Non-Urban_________
6. List number of decimal places reported right of decimal point:
    a. Urban_________
    b. Non-Urban__________
7. Give reporting units:
8. Cite relevant published literature on new method and/or detail on separate sheet procedure for collection & analysis:

In case of questions, call Jacob G. Summers
(919) 688-8146, ext 395 (commercial) or 629-5395(FTS)

Figure 3.4.7-a Request For Assignment of New SAROAD Method Code

General

The Data Quality Information Sheet for Air Pollution Agencies is used to record quality assurance data for control agencies. The form would be completed for each air pollution agency for each state.

Form Preparation

The sheet would be completed with the aid of the agency head or the quality control officer. Entries are made on the sheet as follows:

1. Identification Section
   a. State - Enter the SAROAD state code from Volume V, Section 2.1.0.
   b. Agency I.D. - Enter the Agency I.D. from Volume V, Section 6.1.0. If agency ID has not been assigned, request a code from the Data Processing Section, NADB.
   c. Year/Month - Enter the year/month in which the questionaire is being completed.
2. Data Section
   a. Agency Name - Enter the name of the city, county, region, state, or other agency.
   b. Agency Head - Enter the name of the individual who is the agency head or the quality control officer. Abbreviate to a maximum of 18 characters.
   c. Questions - Enter the correct or closest answer for questions 1-15. The questions are completed with a choice simple yes or no, by the selection of the closest multiple choice answer, or by entering the numeric value.
      Questions 1-8 of the opinion poll are optional and are for future evaluation.
3. Action Code - Enter an A for data to be added, a D for deleted, and a C for changes.

General

The Data Quality Information Sheet for Laboratories is used to record quality assurance data for laboratories. The form would be completed for every laboratory utilized by the air pollution agency.

Form Preparation

The sheet would be completed by the laboratory head or the quality control officer. The questionnaire creates two computer cards with the entries as follows:

1. Identification Section
    - a. State - Enter the SAROAD state code from Volume V, Section 2.1.0.
    - b. Laboratory I.D. - Enter the laboratory code from Volume V, Section 6.2.0. If a laboratory code has not been assigned, request a code from the Data Processing Section, NADB.
    - c. Year/Month - Enter the year/month in which the questionnaire is being completed.
2. Data Section
    - a. Laboratory Name - Enter the laboratory name using any necessary abbreviations.
    - b. Laboratory Street Address and City - Enter the correct mailing address for the laboratory.
    - c. Quality Control Officer - Enter the name using any necessary abbreviations.
    - d. Questions - Enter the answer for the questions in the appropriate fields.
3. Action Code - Enter an A for additions, a C for changes, and a D for deletes.

General

The Data Quality Information Sheet for Air Pollution Sites is utilized to record data collection activities at each site. The form would be completed for each site reporting data to SAROAD.

Form Preparation

The sheet would be completed for each site by the chemist or the quality control officer in charge of the monitoring network. Entries are made on the sheet as follows:

1. Identification Section
    a. State-Area-Site-Agency-Project - Enter the code numbers assigned to this site by NADB when Site Identification forms were originally submitted. These combined codes provide a unique identification key and must remain constant for all data submitted from a specific site.
    b. Agency I.D. - Enter the Agency ID from Volume V, Section 6.1.0. If the Agency ID has not been assigned, request a code from the Data Processing Section, NADB.
    c. Year/Month - Enter the year/month in which the questionnaire is being completed.
2. Data Section
    a. Agency operating site - Enter the Agency Name operating the site. If an Agency questionnaire has not been completed, complete a questionnaire for the agency.
    b. Questions - Enter the correct answer to the questions from the choices given.
3. Action Code - Enter an A for additions, a C for changes, or a D for deletes.

General

The Data Quality Information Sheets for Pollutants are used to record quality assurance data for individual pollutants monitored at each site. The sheet would be completed for each pollutant monitored at a site as given by answers to question (1) of the site sheet.

Form Preparation

The sheet would be completed for each site-pollutant combination by the individual completing the site sheet. Entries are made on the sheet as follows:

1. Identification Section
   a. State-Area-Site-Agency-Project - Enter the code numbers assigned to this site by NADB when site identification forms were originally submitted. These combined codes provide a unique identification key and must remain constant for all data submitted from a specific site.
   b. Year/Month - Enter the year/month in which the questionnaire is being completed.
   c. Laboratory I.D. - Enter the laboratory ID from Volume V, Section 6.2.0. If the laboratory has not assigned an ID, request a code from the Data Processing Section, NADB.
   d. Pollutant Code - Preprinted pollutant code which corresponds to codes in Volume V, Section 4.5.0.
   e. Method Code - Enter the method code from the Parameter File in Volume V, Section 4.5.0.
2. Data Section
   a. Sampler Brand - Model No. - Enter the sampler brand name and model number which is used to analyze each specific pollutant.

b. Questions - Enter the correct answers to each question based on the possible choices. For suspended particulate, carbon monoxide, and photochemical oxidants, all questions should be answered. For sulfur dioxide and nitrogen dioxide, either the questions for continuous samplers or for bubbler samples should be answered based on the method.

3. Action Code - Enter an A for additions, a C for changes, or a D for deletes.

Six unique cards are identified on the first page of each area source form being submitted. Up to 24 cards of the seventh card format may be identified on page two. Each card has a number in column 80 which indicates the card sequence number. The following general instructions must be followed for keypunching all AEROS area source data.

At least cards 1 through 6 will be punched for each form.

Card columns 1-9 at the top of the form will be punched as the first nine columns on each card on a given form. Any of columns 1-9 that are blank must be zero filled.

For cards 1-5, all data in columns 1-77 must be numeric. Blank fields may be left blank. Any field containing data must be right-justified with leading zeros added.

Card 6 (comments) may contain alphabetic data; left-justified.

Multiple card 7's may be submitted for each county. Card columns 1-13 must be completed with any blank columns zero filled. All data in columns 1-43 must be numeric and right justified. Columns 44-77 may contain alphabetic data; left justified.

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JOB TITLE AREA SOURCE FORM - EPA (DUR) 219

CARD TYPE 1

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
1	State	1	2	2	X			X	X	X	
2	County	3	6	4	X			X	X	X	
3	AQCR	7	9	3	X			X	X	X	
4	Year of Record	10	11	2	X			X		X	
5	Emissions Estimates										
5a	Particulates	12	16	5	X			X	X	X	
5b	SO_2	17	20	4	X			X	X	X	
5c	NO_x	21	24	4	X			X	X	X	
5d	HC	25	29	5	X			X	X	X	
5e	CO	30	34	5	X			X	X	X	
6	Sulfur Content (%)										
6a	Anth. Coal	35	36	2	X				X	X	
6b	Bitum. Coal	37	38	2	X				X	X	
6c	Dist. Oil	39	40	2	X				X	X	
6d	Resid. Oil	41	42	2	X				X	X	
7	Ash Content (%)										

ENVIRONMENTAL PROTECTION AGENCY	**SECTION** Keypunch Instructions	**SECTION** 4	**CHAPTER** 1	**SUBJECT** 1
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JOB TITLE AREA SOURCE FORM - EPA (DUR) 219

CARD TYPE 1 (Cont'd.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	PUNCH NUMERIC	PUNCH ALPHA	PUNCH LEFT JUSTIFY	PUNCH RIGHT JUSTIFY	PUNCH ZERO FILL	VERIFY	REMARKS
7	Ash Content (%)										
7a	Anth. Coal	43	45	3	X				X	X	
7b	Bitum. Coal	46	48	3	X				X	X	
8	Residential Fuel										
8a	Anth. Coal	49	53	5	X			X	X	X	
8b	Bitum. Coal	54	59	6	X			X	X	X	
8c	Dist. Oil	60	64	5	X			X	X	X	
8d	Resid. Oil	65	68	6	X			X	X	X	
8e	Nat. Gas	69	73	5	X			X	X	X	
8f	Wood	74	77	4	X			X	X	X	
9	Action		78	1		X				X	
10	Form Type		79	1		X				X	Always 'A'
11	Card Number		80	1	X					X	Always '1'

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CARD TYPE 2

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	PUNCH NUMERIC	PUNCH ALPHA	PUNCH LEFT JUSTIFY	PUNCH RIGHT JUSTIFY	PUNCH ZERO FILL	VERIFY	REMARKS
1	State	1	2	2	X			X	X	X	
2	County	3	6	4	X			X	X	X	
3	AQCR	7	9	3	X			X	X	X	
4	Commercial and Institutional Fuel										
4a	Anth. Coal	10	14	5	X			X	X	X	
4b	Bitum. Coal	15	19	5	X			X	X	X	
4c	Dist. Oil	20	24	5	X			X	X	X	
4d	Resid. Oil	25	29	5	X			X	X	X	
4e	Nat. Gas	30	33	4	X			X	X	X	
4f	Wood	34	35	2	X			X	X	X	
5	Industrial Fuel										
5a	Anth. Coal	36	41	6	X			X	X	X	
5b	Bitum. Coal	42	47	6	X			X	X	X	
5c	Coke	48	51	4	X			X	X	X	
5d	Dist. Oil	52	56	5	X			X	X	X	
5e	Resid. Oil	57	61	5	X			X	X	X	

JOB TITLE AREA SOURCE FORM - EPA (DUR) 219

CARD TYPE 2 (Cont'd.)

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
5f	Nat. Gas	62	66	5	X			X	X	X	
5g	Wood	67	69	3	X			X	X	X	
5h	Process Gas	70	73	4	X			X	X	X	
6	Blank	74	77	4							
7	Action		78	1		X				X	
8	Form Type		79	1		X				X	Always 'A'
9	Card Number		80	1	X					X	Always '2'

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CARD TYPE 3

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	PUNCH NUMERIC	PUNCH ALPHA	PUNCH LEFT JUSTIFY	PUNCH RIGHT JUSTIFY	PUNCH ZERO FILL	VERIFY	REMARKS
1	State	1	2	2	X			X	X	X	
2	County	3	6	4	X			X	X	X	
3	AQCR	7	9	3	X			X	X	X	
4	On-Site Incineration										
4a	Residential	10	15	6	X			X	X	X	
4b	Industrial	16	20	5	X			X	X	X	
4c	Comm-Inst.	21	24	4	X			X	X	X	
5	Open-Burning										
5a	Residential	25	30	6	X			X	X	X	
5b	Industrial	31	36	6	X			X	X	X	
5c	Comm-Inst.	37	41	5	X			X	X	X	
6	Gasoline Fuel										
6a	Light Vehicle	42	48	7	X			X	X	X	
6b	Heavy Vehicle	49	54	6	X			X	X	X	
6c	Off-Highway	55	60	6	X			X	X	X	
7	Diesel Fuel										

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CARD TYPE 3 (Cont'd.)

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
7	Diesel Fuel										
7a	Heavy Vehicle	61	66	6	X			X	X	X	
7b	Off-Highway	67	71	5	X			X	X	X	
7c	Rail Locomotive	72	76	5	X			X	X	X	
8	Density Code		77	1	X					X	
9	Action		78	1		X				X	
10	Form Type		79	1		X				X	Always 'A'
11	Card		80	1	X					X	Always '3'

JOB TITLE AREA SOURCE FORM - EPA (DUR) 219

CARD TYPE 4

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
1	State	1	2	2	X			X	X	X	
2	County	3	6	4	X			X	X	X	
3	AQCR	7	9	3	X			X	X	X	
4	Aircraft										
4a	Military LTO	10	13	4	X			X	X	X	
4b	Civil LTO	14	19	6	X			X	X	X	
4c	Commercial LTO	20	24	5	X			X	X	X	
5	Vessels										
5a	Anth. Coal	25	28	4	X			X	X	X	
5b	Diesel Oil	29	32	4	X			X	X	X	
5c	Resid. Oil	33	37	5	X			X	X	X	
5d	Gasoline	38	41	4	X			X	X	X	
6	Evaporation										
6a	Solvents Pur.	42	47	6	X			X	X	X	
6b	Gas Marketed	48	52	5	X			X	X	X	
7	Measured Veh. Miles										

JOB TITLE AREA SOURCE FORM - EPA (DUR) 219

CARD TYPE 4 (Cont'd.)

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
7	Measured Veh. Miles										
7a	Limited Access	53	58	6	X			X	X	X	
7b	Rural	59	64	6	X			X	X	X	
7c	Suburban	65	70	6	X			X	X	X	
7d	Urban	71	77	7	X			X	X	X	
8	Action		78	1		X				X	
9	Form Type		79	1		X				X	Always 'A'
10	Card		80	1	X					X	Always '4'

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CARD TYPE 5

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
1	State	1	2	2	X			X	X	X	
2	County	3	6	4	X			X	X	X	
3	AQCR	7	9	3	X			X	X	X	
4	Dirt Roads Traveled	10	16	7	X			X	X	X	
5	Dirt Air Strips	17	21	5	X			X	X	X	
6	Construction Land	22	27	6	X			X	X	X	
7	Wind Erosion	28	32	5	X			X	X	X	
8	Land Tilling	33	37	5	X			X	X	X	
9	Forest Wildfire										
9a	Area - acres	38	44	7	X			X	X	X	
9b	Quantity	45	47	3	X			X	X	X	
10	Managed Burning										
10a	Area - acres	48	53	6	X			X	X	X	
10b	Quantity	54	56	3	X			X	X	X	
11	Agricultural Burning Field										
11a	Area - acres	57	62	6	X			X	X	X	

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CARD TYPE 5 (Cont'd.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	PUNCH NUMERIC	PUNCH ALPHA	PUNCH LEFT JUSTIFY	PUNCH RIGHT JUSTIFY	PUNCH ZERO FILL	VERIFY	REMARKS
11b	Quantity	63	65	3	X			X	X	X	
12	Frost Control										
12a	Orchard Heaters	66	69	4	X			X	X	X	
12b	Days Fired	70	72	3	X			X	X	X	
13	Structure Fires	73	77	5	X			X	X	X	
14	Action		78	1		X				X	
15	Form Type		79	1		X				X	Always 'A'
16	Card		80	1	X					X	Always '5'

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JOB TITLE AREA SOURCE FORM - EPA (DUR) 219

CARD TYPE 6

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
1	State	1	2	2	X			X	X	X	
2	County	3	6	4	X			X	X	X	
3	AQCR	7	9	3	X			X	X	X	
4	Comments	10	77	68		X	X				
5	Action		78	1		X				X	
6	Form Type		79	1		X				X	Always 'A'
7	Card		80	1	X					X	Always '6'

JOB TITLE AREA SOURCE FORM - EPA (DUR) 219

CARD TYPE 7

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
1	State	1	2	2	X			X	X	X	
2	County	3	6	4	X			X	X	X	
3	AQCR	7	9	3	X			X	X	X	
4	Year of Record	10	11	2	X			X	X	X	
5	Source Code	12	13	2	X			X		X	
6	Emission Estimates										
6a	Particulate	14	19	6	X			X	X	X	
6b	SO_x	20	24	5	X			X	X	X	
6c	NO_x	25	30	6	X			X	X	X	
6d	HC	31	36	6	X			X	X	X	
6e	CO	37	43	7	X			X	X	X	
7	Comments	44	77	34		X	X			X	
8	Action		78	1		X				X	
9	Form Type		79	1		X				X	Always 'A'
10	Card		80	1	X					X	Always '7'

Seven unique cards are identified for each emission point being submitted. Each card has a number in column 80. Each form has one card 1, one card 2, one card 3, one card 4, one card 5, five card 6's, and four card 7's. The following general instructions must be followed for keypunching AEROS point source data.

Card 1 will be punched unless it has been crossed out or unless columns 14-77 are blank.

Cards 2, 3, 4, and 5 will be punched for every form.

Only the card 6's that have data tabulated in card columns 16-77 will be punched, and only the card 7's that have data tabulated in card columns 26-77 will be punched.

Card columns 1-13 at the top of the form will be punched as the first 13 columns on each card on a given form. For columns 1-13, any columns that are blank must be zero filled.

Card columns 14-15, printed at the beginning of card 2, will be punched in the 14th and 15th columns of cards 2 through 6.

Card columns 14-25 of card 7 will be punched as coded.

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JOB TITLE POINT SOURCE INPUT FORM - EPA (DUR) 220

CARD TYPE 1

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
1	State Code	1	2	2	X			X	X	X	
2	County Code	3	6	4	X			X	X	X	
3	AQCR	7	9	3	X			X	X	X	
4	Plant ID Nr	10	13	4		X		X	X	X	
5	City	14	17	4	X			X	X	X	
6	UTM Zone	18	19	2	X			X	X	X	
7	Year of Record	20	21	2	X			X	X	X	
8	Establishment Name & Address	22	61	40		X	X				
9	Contact Personnel	62	73	12		X	X				
10	OWN		74	1			X			X	
11	Blank	75	77	3							
12	Action		78	1		X				X	
13	Form Type		79	1		X				X	Always 'P'
14	Card Type		80	1	X					X	Always '1'

JOB TITLE POINT SOURCE INPUT FORM - EPA (DUR) 220

CARD TYPE 2

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
1	State	1	2	2	X			X	X	X	
2	County	3	6	4	X			X	X	X	
3	AQCR	7	9	3	X			X	X	X	
4	Plant ID Nr	10	13	4		X		X	X	X	
5	Point ID	14	15	2		X		X	X	X	
6	Year of Record	16	17	2	X			X	X	X	
7	SIC	18	21	3	X			X	X	X	
8	IPP Process	22	23	2	X			X	X	X	
9	UTM Coordinates										
9a	Horizontal Kn	24	27	4	X			X	X	X	
9b	Vertical Kn	28	32	5	X			X	X	X	
10	Stack Data										
10a	Height	33	36	4	X			X	X	X	
10b	Diameter	37	39	3	X			X	X	X	
10c	Temperature	40	43	4	X			X	X	X	
10d	Flow Rate	44	50	7	X			X	X	X	

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CARD TYPE 2 (cont'd.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	PUNCH NUMERIC	PUNCH ALPHA	PUNCH LEFT JUSTIFY	PUNCH RIGHT JUSTIFY	PUNCH ZERO FILL	VERIFY	REMARKS
10e	Plume Height	51	54	4	X			X	X	X	
11	Blank		55	1							
12	Points with common stack	56	59	4	X			X	X	X	
13	Blank	60	77	18							
14	Action		78	1		X				X	
15	Form Type		79	1		X				X	Always 'P'
16	Card Type		80	1	X					X	Always '2'

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CARD TYPE 3

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
1	State	1	2	2	X			X	X	X	
2	County	3	6	4	X			X	X	X	
3	AQCR	7	9	3	X			X	X	X	
4	Plant ID Nr	10	13	4		X		X	X	X	
5	Point ID	14	15	2		X		X	X	X	
6	Year of Record	16	17	2	X			X	X	X	
7	Boiler Design Cap.	18	22	5	X			X	X	X	
8	Control Equipment										
8a	Primary Part.	23	25	3	X			X	X	X	
8b	Secondary Part.	26	28	3	X			X	X	X	
8c	Primary SO_2	29	31	3	X			X	X	X	
8d	Secondary SO_2	32	34	3	X			X	X	X	
8e	Primary NO_x	35	37	3	X			X	X	X	
8f	Secondary NO_x	38	40	3	X			X	X	X	
8g	Primary HC	41	43	3	X			X	X	X	
8h	Secondary HC	44	46	3	X			X	X	X	

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CARD TYPE 3 (cont'd.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	PUNCH NUMERIC	PUNCH ALPHA	PUNCH LEFT JUSTIFY	PUNCH RIGHT JUSTIFY	PUNCH ZERO FILL	VERIFY	REMARKS
8	Control Equipment (cont'd.)										
8i	Primary CO	47	49	3	X			X	X	X	
8j	Secondary CO	50	52	3	X			X	X	X	
9	Estimate Control Effic.										
9a	Particulates	53	55	3	X				X	X	
9b	SO_2	56	58	3	X				X	X	
9c	NO_x	59	61	3	X				X	X	
9d	HC	62	64	3	X				X	X	
9e	CO	65	67	3	X				X	X	
10	Blank	68	77	10							
11	Action		78	1		X				X	
12	Form Type		79	1		X				X	Always 'P'
13	Card Type		80	1	X					X	Always '3'

JOB TITLE POINT SOURCE INPUT FORM - EPA (DUR) 220

CARD TYPE 4

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
1	State	1	2	2	X			X	X	X	
2	County	3	6	4	X			X	X	X	
3	AQCR	7	9	3	X			X	X	X	
4	Plant ID Nr	10	13	4		X		X	X	X	
5	Point ID	14	15	2		X		X	X	X	
6	Year of Record	16	17	2	X			X	X	X	
7	Percent Annual Thruput										
7a	Dec.-Feb.	18	19	2	X			X	X	X	
7b	Mar.-May	20	21	2	X			X	X	X	
7c	Jun.-Aug.	22	23	2	X			X	X	X	
7d	Sep.-Nov.	24	25	2	X			X	X	X	
8	Normal Operating										
8a	Hr/Day	26	27	2	X			X	X	X	
8b	Day/Wk		28	1	X					X	
8c	Wk/Yr	29	30	2	X			X	X	X	
9	Emission Estimates										

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CARD TYPE 4 (cont'd.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	PUNCH NUMERIC	PUNCH ALPHA	PUNCH LEFT JUSTIFY	PUNCH RIGHT JUSTIFY	PUNCH ZERO FILL	VERIFY	REMARKS
9	Emission Estimates										
9a	Particulates	31	37	7	X			X	X	X	
9b	SO_2	38	44	7	X			X	X	X	
9c	NO_x	45	51	7	X			X	X	X	
9d	HC	52	58	7	X			X	X	X	
9e	CO	59	65	7	X			X	X	X	
10	Estimation Method										
10a	Particulates		66	1	X					X	
10b	SO_2		67	1	X					X	
10c	NO_x		68	1	X					X	
10d	HC		69	1	X					X	
10e	CO		70	1	X					X	
11	% Space Heat	71	73	3	X				X	X	
12	Blank	74	77	4							
13	Action		78	1		X				X	
14	Form Type		79	1		X				X	Always 'P'

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CARD TYPE 4 (cont'd.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	PUNCH NUMERIC	PUNCH ALPHA	PUNCH LEFT JUSTIFY	PUNCH RIGHT JUSTIFY	PUNCH ZERO FILL	VERIFY	REMARKS
15	Card Type		80	1	X					X	Always '4'

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CARD TYPE 5

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	PUNCH NUMERIC	PUNCH ALPHA	PUNCH LEFT JUSTIFY	PUNCH RIGHT JUSTIFY	PUNCH ZERO FILL	VERIFY	REMARKS
1	State	1	2	2	X			X	X	X	
2	County	3	6	4	X			X	X	X	
3	AQCR	7	9	3	X			X	X	X	
4	Plant ID Nr	10	13	4		X		X	X	X	
5	Point ID	14	15	2		X		X	X	X	
6	Year of Record	16	17	2	X			X	X	X	
7	Allowable Emissions										
7a	Particulate	18	24	7	X			X	X	X	
7b	SO_2	25	31	7	X			X	X	X	
7c	NO_x	32	38	7	X			X	X	X	
7d	HC	39	45	7	X			X	X	X	
7e	CO	46	52	7	X			X	X	X	
8	Compliance Status		53	1	X					X	
9	Compliance Schedule										
9a	Year	54	55	2	X			X	X	X	
9b	Month	56	57	2	X			X	X	X	

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CARD TYPE 5 (cont'd.)

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
10	Compliance Status Update										
10a	Year	58	59	2	X			X	X	X	
10b	Month	60	61	2	X			X	X	X	
10c	Day	62	63	2	X			X	X	X	
11	ECAP		64	1	X					X	
12	Control Regulations										
12a	Reg. 1	65	68	4							Leave Blank
12b	Reg. 2	69	72	4							Leave Blank
12c	Reg. 3	73	76	4							Leave Blank
13	Blank		77	1							
14	Action		78	1		X				X	
15	Form Type		79	1		X				X	Always 'P'
16	Card Type		80	1	X					X	Always '5'

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CARD TYPE 6

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
1	State	1	2	2	X			X	X	X	
2	County	3	6	4	X			X	X	X	
3	AQCR	7	9	3	X			X	X	X	
4	Plant ID Nr	10	13	4		X		X	X	X	
5	Point ID	14	15	2		X		X	X	X	
6	Year of Record	16	17	2	X			X	X	X	
7	SCC										
7a	I		18	1	X					X	
7b	II	19	20	2	X			X	X	X	
7c	III	21	23	3	X			X	X	X	
7d	IV	24	25	2	X			X	X	X	
8	Fuel Process	26	32	7	X			X	X	X	
9	Maximum Design Rate	33	39	7	X				X	X	
10	Sulfur Content	40	42	3	X				X	X	
11	Ash Content	43	45	3	X				X	X	
12	Heat Content	46	50	5	X			X	X	X	

JOB TITLE POINT SOURCE INPUT FORM - EPA (DUR) 220

CARD TYPE 6 (cont'd.)

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
13	Comments	51	70	20		X	X				
14	Source		71	1		X				X	
15	Confidentiality		72	1	X						
16	Blank	73	77	5							
17	Action		78	1		X				X	
18	Form Type		79	1		X				X	Always 'P'
19	Card Type		80	1	X					X	Always '6'

JOB TITLE POINT SOURCE INPUT FORM - EPA (DUR) 220

CARD TYPE 7

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
1	State	1	2	2	X			X	X	X	
2	County	3	6	4	X			X	X	X	
3	AQCR	7	9	3	X			X	X	X	
4	Plant ID Nr	10	13	4		X		X	X	X	
5	Point ID	14	15	2		X		X	X	X	
6	Year of Record	16	17	2	X			X	X	X	
7	SCC										
7a	I		18	1	X					X	
7b	II	19	20	2	X			X	X	X	
7c	III	21	23	3	X			X	X	X	
7d	IV	24	25	2	X			X	X	X	
8	Comments	26	77	52		X	X			X	
9	Action		78	1		X				X	
10	Form Type		79	1		X				X	Always 'P'
11	Card Type		80	1	X					X	Always '7'

General Instructions

SOTDAT consists of a maximum of seven different type cards. A maximum of 40 cards is possible for any one form number. All cards are punched starting with the form number which should be right justified in card spaces 1-6, followed by the preprinted card number in spaces 7 and 8.

All numbers should be right justified in their fields.

All fields with blanks must be left blank. DO NOT punch zeros, dashes or any other characters for blank spaces. For these data forms Zero = 0 and letter "O" = O.

Specific Insturctions for Each Type Card

Card No. A1--Punch line straight across as it appears on form. 79 spaces maximum should be completed.

Card No. B1--Punch form line straight across as it appears on form. 80 spaces.

Card No. B2--Punch form line straight across up to the B-16 Section (spaces 1-49).

Starting with position 50 for 12 spaces, 50-61, enter the 12 characters following the box that is checked. There will be one number followed by 11 characters or spaces. All characters and spaces must be entered. Then enter the Comments Section 17 with top line first, then bottom line starting with position 62. Enter only what is indicated. If the section is not full, leave the rest of the section blank.

Cards No. C1-C8--Punch form line straight across. Punch cards only for those form lines containing data. 80 spaces maximum. NOTE: If all C1-C8 cards are full, check for additional "pollutant test results" data on a second form with the same form number. These data should be punched with an "F" replacing the "C" in the card position "7". The F card(s) is (are) to be placed between the C8 card and D0 card. There may be a maximum of 8 "F" cards (numbered F1-F8). Double check these data to ensure each of these cards has an "F" in position "7".

Cards No. D0-D4--Punch form line straight across. Punch cards only for those lines containing data. 78 spaces completed.

Cards No. D5-D9--Punch form line straight across. Punch cards only for those lines containing data. 79 spaces completed. NOTE: There should be two "D" cards for each device number in position "9". These cards must be kept in the order of apperance on the form. For each device number in group D0-D4, there should be a corresponding card in D5-D9 as follows:

D0 - D5
D1 - D6
D2 - D7
D3 - D8
D4 - D9

If there is nothing entered on the form for the corresponding card number, punch the corresponding card with form number, card number and device number, leaving the rest of the card blank.

If there are no data for cards D0-D4, do not punch these cards or their corresponding cards, D5-D9.

E Cards--Enter the form number identical to other sections, right justified in card spaces 1-6. Enter an "E" in space "7" and the number of the card starting with 0 in space "8". Spaces 9-80 are for the comments and are free style.

There must always be at least one E card.

If there are no comments printed in Section E, enter "No Comments" starting with position 9.

If there are comments printed in Section E, these will be entered as cards E0-E9, a maximum of 10 cards. Use as many cards as necessary, up to 10, to punch the comments. Insure that comments are entered in a readable form.

F Cards--See C1-C8 card instructions. If punched, these cards go between Section C and D.

G Card --Punch name and address as shown at top left of form onto one card. Abbreviations may be used as long as the information is clearly understood. Spaces 9-80 will be used for the information. Spaces 1-6 should contain the form number and spaces 7 & 8 should contain GO.

Separate the four lines of the address and phone number block on the form with an asterick (*) only (no spaces). Use space between words of the address as required for readability.

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JOB TITLE Source Test Data Form

CARD TYPE A - Identification, Plant, and Fuel Data

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
1	Form Number										
1a	Data Origin	1	1	1		X				X	
1b	Form Number	2	6	5	X			X	X	X	
2	Card Number	7	8	2		X				X	'A1'
3	State	9	10	2	X			X	X	X	
4	County	11	14	4	X			X	X	X	
5	AQCR	15	17	3	X			X	X	X	
6	Plant	18	21	4		X		X	X	X	
7	Point	22	23	2		X		X	X	X	
8	Run Date	24	29	6	X			X	X	X	
9	Source Classification Code	30	37	8	X					X	
10	Reason Tested	38	38	1	X					X	
11	Tested By	39	39	1	X					X	
12	Run Number	40	41	2	X			X	X	X	
13	Plant Rates										
13a	Capability	42	48	7	X			X	X	X	

JOB TITLE Source Test Data Form

CARD TYPE A - (Cont.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
13b	This Run	49	55	7	X			X	X	X	
14	Fuel Data										
14a	Type	56	56	1		X				X	
14b	Percent sulfur	57	61	5	X			X	X	X	
14c	Percent ash	62	66	5	X			X	X	X	
14d	Percent Nitrogen	67	71	5	X			X	X	X	
15	Heat										
15a	Units	72	72	1		X				X	
51b	Value	73	79	7	X			X	X	X	

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JOB TITLE Source Test Data Form

CARD TYPE B1 - Process Stream Parameters

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
1	Form Number										
1a	Data Origin	1	1	1		X				X	
1b	Form Number	2	6	5	X			X	X	X	
2	Card Number	7	8	2		X				X	'B1'
3	Gas Flow Rate reported	9	9	1	X					X	
4	Flow Rate	10	17	8	X			X	X	X	
5	Cross Section	18	23	6	X			X	X	X	
6	Gas Temperature	24	27	4	X			X	X	X	
7	Gas Pressure	28	32	5	X			X	X	X	
8	Traverse Points	33	34	2	X			X	X	X	
9	Est. Gas Mol. Wt.	35	40	6	X			X	X	X	
10	Percent excess air	41	45	5	X			X	X	X	
11	Percent Isokinetic	46	50	5	X			X	X	X	
12	Gas Composition										
12a	Percent Water	51	55	5	X			X	X	X	
12b	" CO_2	56	60	5	X			X	X	X	

JOB TITLE Source Test Data Form

CARD TYPE B1 - (Cont.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
12c	Percent CO	61	65	5	X			X	X	X	
12d	" O_2	66	70	5	X			X	X	X	
12e	" N_2	71	75	5	X			X	X	X	
13	Special Data	76	80	5							Blank

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JOB TITLE Source Test Data Form

CARD TYPE B2 - Process Stream Parameters (Cont.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
1	Form Number										
1a	Data Origin	1	1	1		X				X	
1b	Form Number	2	6	5	X			X	X	X	
2	Card Number	7	8	2		X				X	'B2'
3	Stack Height	9	12	4				X	X	X	
4	Avg. Stack Velocity	13	16	4				X	X	X	
5	Sampling Location	17	17	1	X					X	
6	Particulate Size Dist. % by weight										
6a	$\leq$ .1	18	21	4	X			X	X	X	
6b	$\leq$ .5	22	25	4	X			X	X	X	
6c	$\leq$ 1.0	26	29	4	X			X	X	X	
6d	$\leq$ 2.0	30	33	4	X			X	X	X	
6e	$\leq$ 5.0	34	37	4	X			X	X	X	
6f	$\leq$ 10.0	38	41	4	X			X	X	X	
6g	$\leq$ 20.0	42	45	4	X			X	X	X	
6h	$\geq$ 20.0	46	49	4	X			X	X	X	

JOB TITLE Source Test Data Form

CARD TYPE B2 - Process Stream Parameters (Cont.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
7	Particle Sizer	50	61	12		X	X				
8	Comments	62	80	19		X	X				

JOB TITLE Source Test Data Form

CARD TYPE C - Pollutant Test Results

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
1	Form Number										
1a	Data Origin	1	1	1		X				X	
1b	Form Number	2	6	5	X			X	X	X	
2	Card Number	7	8	2		X				X	'C1 - 'C8
3	Pollutant 1	9	14	6		X	X			X	
4	Test Method	15	16	2	X					X	
5	Units	17	17	1	X					X	
6	Sample Time	18	22	5	X			X	X	X	
7	Sampling Position	23	23	1	X					X	
8	Test Results	24	29	6	X			X	X	X	
9	Pollutant Temp.	30	32	3	X			X	X	X	
10	Pollutant 2	33	38	6		X	X			X	
11	Test Method	39	40	2	X					X	
12	Units	41	41	1	X					X	
13	Sample Time	42	46	5	X			X	X	X	
14	Sampling Position	47	47	1	X					X	

JOB TITLE Source Test Data Form

CARD TYPE C - (Cont.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
15	Test Results	48	53	6	X			X	X	X	
16	Pollutant Temp.	54	56	3	X			X	X	X	
17	Pollutant 3	57	62	6		X	X			X	
18	Test Method	63	64	2	X					X	
19	Units	65	65	1	X					X	
20	Sample Time	66	70	5	X			X	X	X	
21	Sampling Position	71	71	1	X					X	
22	Test Results	72	77	6	X			X	X	X	
23	Pollutant Temp.	78	80	3	X			X	X	X	

JOB TITLE Source Test Data Form

CARD TYPE D0 - D4 - Control Device Data

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
1	Form Number										
1a	Origin	1	1	1		X				X	
1b	Form Number	2	6	5	X			X	X	X	
2	Card Number	7	8	2		X				X	'D0'-'D4'
3	Device Number	9	9	1	X					X	'1'-'5'
4	Device Code	10	12	3	X					X	
5	Pollutant 1	13	18	6		X	X			X	
6	Percent Efficiency	19	23	5	X			X	X	X	
7	Pollutant 2	24	29	6		X	X			X	
8	Percent Efficiency	30	34	5	X			X	X	X	
9	Pollutant 3	35	40	6		X	X			X	
10	Percent Efficiency	41	45	5	X			X	X	X	
11	Pollutant 4	46	51	6		X	X			X	
12	Percent Efficiency	52	56	5	X			X	X	X	
13	Pollutant 5	57	62	6		X	X			X	
14	Percent Efficiency	63	67	5	X			X	X	X	

JOB TITLE Source Test Data Form

CARD TYPE D0 - D4 - (Cont.)

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
		FROM	THRU								
15	Pollutant 6	68	73	6		X	X			X	
16	Percent Efficiency	74	78	5	X			X	X	X	

JOB TITLE Source Test Data Form

CARD TYPE D5 - D9 - Control Device Data (Cont.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
1	Form Number										
1a	Origin	1	1	1		X				X	
1b	Form Number	2	6	5	X			X	X	X	
2	Card Number	7	8	2		X				X	'D5'-'D9
3	Device Number	9	9	1	X					X	'1'-'5'
4	Design Flow Rate	10	17	8	X			X	X	X	
5	Year Installed	18	19	2	X					X	
6	Operating Parameter 1	20	25	6	X			X	X	X	
7	" " 2	26	31	6	X			X	X	X	
8	" " 3	32	37	6	X			X	X	X	
9	" " 4	38	43	6	X			X	X	X	
10	" " 5	44	49	6	X			X	X	X	
11	" " 6	50	55	6	X			X	X	X	
12	" " 7	56	61	6	X			X	X	X	
13	" " 8	62	67	6	X			X	X	X	
14	" " 9	68	73	6	X			X	X	X	

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JOB TITLE Source Test Data Form

CARD TYPE D5 - D9 - Control Device Data (Cont.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
15	Operating Parameter 10	74	79	6	X			X	X	X	

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JOB TITLE Source Test Data Form

CARD TYPE E - Comments

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
1	Form Number										
1a	Origin	1	1	1		X				X	
1b	Form Number	2	6	5	X			X	X	X	
2	Card Number	7	8	2		X				X	'E0'-"E9
3	Comments	9	80	72		X	X				

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JOB TITLE Source Test Data Form

CARD TYPE G - Plant Name and Address

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
1	Form Number										
1a	Origin	1	1	1		X				X	
1b	Form Number	2	6	5	X			X	X	X	
2	Card Number	7	8	2		X				X	'GO'
3	Plant Name	9-variable				X	X			X	
4	Asterisk					X				X	*
5	Address	Variable				X	X			X	
6	Asterisk					X				X	*
7	City - State	Variable				X	X			X	
8	Asterisk	Variable				X				X	*
9	Telephone	69	80	12		X	X			X	

On SAROAD Site ID Forms, the card column numbers are written below the blocks or lines. Punch exactly as completed. Punch cards C and/or D only when comments are written. When Card C characters exceed 65, continue on Card D.

CARD A
- o Punch columns 1-13 from the right side of the form.
- o Punch columns 14-51 from the left side of the form.
- o DO NOT PUNCH COLUMNS 52-59. These columns are filled in by a computer program.
- o A choice is given for filling out columns 60-76. Punch whichever line is filled out. DO NOT PUNCH ZEROS WHERE BLANKS EXIST. If both lines are filled out, punch the top line. If neither is filled out, leave columns 60-76 blank.
- o Punch columns 77-80 from the right side of the form.

CARD B
- o Punch columns 1-17 from the right side of the form. DO NOT PUNCH ZEROS FOR BLANKS IN COLUMNS 14-17.
- o Punch columns 18-78 from the left side of the form.
- o Punch column 80 from the right side of the form, leaving 79 blank.

CARD C
- o Only when comments are written, punch columns 1-13 from the right side of the form.
- o Punch columns 14-79 from the left side of the form. WHEN CARD C CHARACTERS EXCEED 65, CONTINUE ON CARD D.
- o Punch column 80 from the right side of the form.

CARD D
- WHEN CARD C CHARACTERS EXCEED 65, CONTINUE ON CARD D.
- Punch columns 1-13 from the right side of the form.
- Punch columns 14-79 from the left side of the form.
- Punch column 80 from the right side of the form.

CARD E
- Punch columns 1-13 from the right side of the form.
- Punch columns 14-38 from the left side of the form.
- Leave columns 39-79 blank.
- Punch column 80 from the right side of the form.

CARD F
- Punch columns 1-13 from the right side of the form.
- Punch columns 14-54 from the left side of the form.
- Punch both address lines.
- Punch columns 55-80 from the right side of the form. DO NOT PUNCH ZEROS WHERE BLANKS EXIST.

JOB TITLE SAROAD SITE IDENTIFICATION FORM

CARD TYPE A

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
1	Card Type		1	1		X				X	"A"
2	State	2	3	2	X			X	X	X	
3	Area	4	7	4	X			X	X	X	
4	Site	8	10	3	X			X	X	X	
5	Agency		11	1		X				X	
6	Project	12	13	2	X			X	X	X	
7	City Name	14	36	23		X	X				
8	County Name	37	51	15		X	X				
9	City Population	52	59	8	X			X	X	X	
10	Long/Lat. Indicator	60	61	2	X			X	X		"20" if long. & lat. data
11	Longitude Indicator		62	1		X					"W" if long. & lat. data
12	Longitude	63	69	7	X						Leave blank if no en
13	Latitude Indicator		70	1		X					"N" if long. & lat. data
14	Latitude	71	76	6	X						Leave blank if no en
15	UTM Zone	60	61	2	X						cc 60-76 will contain
16	Easting Coordinate	62	69	8	X			X	X		either UTM date or long/lat.

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JOB TITLE SAROAD SITE IDENTIFICATION FORM

CARD TYPE A (Cont'd.)

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
17	Northing Coordinate	70	76	7	X			X	X		
18	Region		77	1	X					X	
19	Time Zone	78	79	2	X					X	
20	Action		80	1	X					X	

JOB TITLE SAROAD SITE IDENTIFICATION FORM

CARD TYPE B

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH						
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
1	Card Type		1	1		X				X	"B"
2	State	2	3	2	X			X	X	X	
3	Area	4	7	4	X			X	X	X	
4	Site	8	10	3	X			X	X	X	
5	Agency		11	1		X				X	
6	Project	12	13	2	X			X	X	X	
7	SMSA	14	17	4	X			X	X	X	
8	Supporting Agency	18	78	61		X	X				
9	Action		80	1	X					X	

JOB TITLE SAROAD SITE IDENTIFICATION FORM

CARD TYPE C

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
1	Card Type		1	1		X				X	"C"
2	State	2	3	2	X			X	X	X	
3	Area	4	7	4	X			X	X	X	
4	Site	8	10	3	X			X	X	X	
5	Agency		11	1		X				X	
6	Project	12	13	2	X			X	X	X	
7	Optional Comments	14	79	66		X	X				
8	Action		80	1	X					X	

JOB TITLE SAROAD SITE IDENTIFICATION FORM

CARD TYPE D

	NAME OF FIELD	**COLUMNS**		**NUMBER COLUMNS**	**PUNCH**					**VERIFY**	**REMARKS**
		FROM	**THRU**		**NUMERIC**	**ALPHA**	**LEFT JUSTIFY**	**RIGHT JUSTIFY**	**ZERO FILL**		
1	Card Type		1	1		X				X	"D"
2	State	2	3	2	X			X	X	X	
3	Area	4	7	4	X			X	X	X	
4	Site	8	10	3	X			X	X	X	
5	Agency		11	1		X				X	
6	Project	12	13	2	X			X	X	X	
7	Optional Comments	14	79	66		X	X				
8	Action		80	1	X					X	

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JOB TITLE SAROAD SITE IDENTIFICATION FORM

CARD TYPE E

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
1	Card Type		1	1		X				X	"E"
2	State	2	3	2	X			X	X	X	
3	Area	4	7	4	X			X	X	X	
4	Site	8	10	3	X			X	X	X	
5	Agency		11	1		X				X	
6	Project	12	13	2	X					X	
7	Abbrev. Site Address	14	38	25		X	X				
8	Action		80	1	X					X	

JOB TITLE SAROAD SITE IDENTIFICATION FORM

CARD TYPE F

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	PUNCH NUMERIC	PUNCH ALPHA	PUNCH LEFT JUSTIFY	PUNCH RIGHT JUSTIFY	PUNCH ZERO FILL	VERIFY	REMARKS
1	Card Type		1	1		X				X	"F"
2	State	2	3	2	X			X	X	X	
3	Area	4	7	4	X			X	X	X	
4	Site	8	10	3	X			X	X	X	
5	Agency		11	1		X				X	
6	Project	12	13	2	X			X	X	X	
7	Sampling Site Address	14	54	41		X	X				
8	Station Type	55	56	2	X					X	
9	County Code	57	60	4	X			X	X	X	
10	AQCR Number	61	63	3	X			X	X	X	
11	AQCR Population	64	71	8	X			X	X	X	
12	Elevation/Gr	72	74	3	X			X	X	X	
13	Elevation MSL	75	78	4	X			X	X	X	
14	Action		80	1	X					X	

The SAROAD Hourly Data Form is punched as follows:

- Thirty-two cards may be punched from one form.
- Column 1 will always contain the numeral '1'.
- Columns 1-18 and 23-32 will be punched from the data in the upper right hand corner of the form, as indicated, and will be the same for all cards punched from the form.
- Columns 19-22 and 33-80 will be punched for only those cards and columns which contain data. Each field will be right-justified, zero-filled.

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JOB TITLE SAROAD HOURLY DATA FORM

CARD TYPE 1

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
1	Card Type		1	1	X					X	"1"
2	State	2	3	2	X			X	X	X	
3	Area	4	7	4	X			X	X	X	
4	Site	8	10	3	X			X	X	X	
5	Agency		11	1		X				X	
6	Project	12	13	2	X			X	X	X	
7	Time		14	1	X	X				X	
8	Year	15	16	2	X					X	
9	Month	17	18	2	X			X	X	X	
10	Day	19	20	2	X			X	X	X	
11	ST HR	21	22	2	X			X	X	X	
12	Parameter Code	23	27	5	X					X	
13	Method	28	29	2	X			X	X	X	
14	Units	20	31	2	X			X	X	X	
15	DP		32	1	X					X	
16	RDG 1	33	36	4	X			X	X	X	

JOB TITLE SAROAD HOURLY DATA FORM

CARD TYPE 1 (Cont'd.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	PUNCH NUMERIC	PUNCH ALPHA	PUNCH LEFT JUSTIFY	PUNCH RIGHT JUSTIFY	PUNCH ZERO FILL	VERIFY	REMARKS
17	RDG 2	37	40	4	X			X	X	X	
18	RDG 3	41	44	4	X			X	X	X	
19	RDG 4	45	48	4	X			X	X	X	
20	RDG 5	49	52	4	X			X	X	X	
21	RDG 6	53	56	4	X			X	X	X	
22	RDG 7	57	60	4	X			X	X	X	
23	RDG 8	61	64	4	X			X	X	X	
24	RDG 9	65	68	4	X			X	X	X	
25	RDG 10	69	72	4	X			X	X	X	
26	RDG 11	73	76	4	X			X	X	X	
27	RDG 12	77	80	4	X			X	X	X	

The SAROAD Daily Data Form is punched as follows:

- Thirty-one cards may be punched from one form.
- Column 1 will always contain the numeral '2'.
- Columns 1-18 will be punched for all cards from the data entered in the upper right portion of the form.
- Columns 19-78 will be punched for any card having data as shown. Data will be right-justified, with leading zeroes.

JOB TITLE SAROAD Daily Data Form

CARD TYPE 2

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
1	Card Type		1	1	X					X	"2"
2	State	2	3	2	X			X	X	X	
3	Area	4	7	4	X			X	X	X	
4	Site	8	10	3	X			X	X	X	
5	Agency		11	1		X				X	
6	Project	12	13	2	X			X	X	X	
7	Time		14	1	X	X				X	Alpha. or numerals allowed
8	Year	15	16	2	X			X	X	X	
9	Month	17	18	2	X			X	X	X	
10	Day	19	20	2	X			X	X	X	
11	ST HR	21	22	2	X			X	X	X	
12	Parameter Code	23	27	5	X			X	X	X	Parameter 1
13	Method	28	29	2	X			X	X	X	
14	Units	30	31	2	X			X	X	X	
15	DP		32	1	X					X	
16	Data Value	33	36	4	X			X	X	X	

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JOB TITLE SAROAD Daily Data Form - Parameters 2-4

CARD TYPE 2 (Cont'd.)

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
17	Parameter Code	37	41	5	X			X	X	X	Parameter 2
18	Method	42	43	2	X			X	X	X	
19	Units	44	45	2	X			X	X	X	
20	DP		46	1	X					X	
21	Data Value	47	50	4	X			X	X	X	
22	Parameter Code	51	55	5	X			X	X	X	Parameter 3
23	Method	56	57	2	X			X	X	X	
24	Units	58	59	2	X			X	X	X	
25	DP		60	1	X					X	
26	Data Value	61	64	4	X			X	X	X	
27	Parameter Code	65	69	5	X			X	X	X	Parameter 4
28	Method	70	71	2	X			X	X	X	
29	Units	72	73	2	X			X	X	X	
30	DP		74	1	X					X	
31	Data Value	75	78	4	X			X	X	X	

The SAROAD Composite Data Form is punched as follows:

- Six cards may be punched from each form.
- Column 1 will always contain the numeral '2'.
- Columns 1-22 will be punched for all cards that contain data in columns 23-78.
- Columns 22-78 will be punched as indicated with each field which contains data right-justified with leading zeros.
- Blank fields will be left blank.

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JOB TITLE SAROAD Composite Data Form

CARD TYPE 2

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	PUNCH NUMERIC	PUNCH ALPHA	PUNCH LEFT JUSTIFY	PUNCH RIGHT JUSTIFY	PUNCH ZERO FILL	VERIFY	REMARKS
1	Card Type		1	1	X					X	"2"
2	State	2	3	2	X			X	X	X	
3	Area	4	7	4	X			X	X	X	
4	Site	8	10	3	X			X	X	X	
5	Agency		11	1		X				X	
6	Project	12	13	2	X			X	X	X	
7	Time		14	1		X				X	"C"
8	Year	15	16	2	X			X	X	X	
9	Period	17	18	2	X			X	X	X	
10	Number of Samples	19	20	2	X			X	X	X	
11	Composite Type		21	1	X					X	
12	Sample Time		22	1	X					X	
13	Parameter Code	23	27	5	X			X	X	X	
14	Method	28	29	2	X			X	X	X	
15	Units	30	31	2	X			X	X	X	
16	DP		32	1	X					X	

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JOB TITLE SAROAD Composite Data Form

CARD TYPE 2 (Cont'd.)

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
17	Value	33	36	4	X			X	X	X	
18	Parameter Code	37	41	5	X			X	X	X	
19	Method	42	43	2	X			X	X	X	
20	Units	44	45	2	X			X	X	X	
21	DP		46	1	X					X	
22	Value	47	50	4	X			X	X	X	
23	Parameter Code	51	55	5	X			X	X	X	
24	Method	56	57	2	X			X	X	X	
25	Units	58	59	2	X			X	X	X	
26	DP		60	1	X					X	
27	Value	61	64	4	X			X	X	X	
28	Parameter Code	65	69	5	X			X	X	X	
29	Methods	70	71	2	X			X	X	X	
30	Units	72	73	2	X			X	X	X	
31	DP		74	1	X					X	
32	Value	75	78	4	X			X	X	X	

The SAROAD Multiple-Parameter Data Form will be punched as follows:

- Six cards can be punched from each form.
- Column 1 will always contain the numeral '2'.
- Columns 1-22 will be punched for all cards which contain data in columns 23-78.
- Columns 22-78 will be punched as indicated with each field which contains data right-justified, zero-filled.
- Blank fields will remain blank.

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JOB TITLE SAROAD Multiple-Parameter Data Form

CARD TYPE 2

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
1	Card Type		1	1	X					X	"2"
2	State	2	3	2	X			X	X	X	
3	Area	4	7	4	X			X	X	X	
4	Site	8	10	3	X			X	X	X	
5	Agency		11	1		X				X	
6	Project	12	13	2	X			X	X	X	
7	Time		14	1	X	X				X	
8	Year	15	16	2	X					X	
9	Month	17	18	2	X			X	X	X	
10	Day	19	20	2	X			X	X	X	
11	ST HR	21	22	2	X			X	X	X	
12	Parameter Code	23	27	5	X			X	X	X	
13	Method	28	29	2	X			X	X	X	
14	Units	30	31	2	X			X	X	X	
15	DP		32	1	X					X	
16	Value	33	36	4	X			X	X	X	

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JOB TITLE SAROAD Multiple-Parameter Data Form

CARD TYPE 2 (Cont'd.)

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
17	Parameter Code	37	41	5	X			X	X	X	
18	Method	42	43	2	X			X	X	X	
19	Units	44	45	2	X			X	X	X	
20	DP		46	1	X					X	
21	Value	47	50	4	X			X	X	X	
22	Parameter Code	51	55	5	X			X	X	X	
23	Method	56	57	2	X			X	X	X	
24	Units	58	59	2	X			X	X	X	
25	DP		60	1	X					X	
26	Value	61	64	4	X			X	X	X	
27	Parameter Code	65	69	5	X			X	X	X	
28	Method	70	71	2	X			X	X	X	
29	Units	72	73	2	X			X	X	X	
30	DP		74	1	X					X	
31	Value	75	78	4	X			X	X	X	

The SAROAD Multiple-Station Data Form will be punched as follows:

- Three cards can be punched from each form.
- Column 1 will always contain the numeral '3'.
- Columns 1-21 will be punched for all cards which contain data in columns 22-75.
- Columns 22-75 will be punched as indicated with each field which contains data right-justified and zero-filled.
- Blank fields will remain blank.

ENVIRONMENTAL PROTECTION AGENCY	**SECTION** Keypunch Instructions	**SECTION** 4	**CHAPTER** 4	**SUBJECT** 6
NATIONAL AIR DATA BRANCH	**CHAPTER** Air Quality Data	**DATE**		**PAGE**
VOLUME II. AEROS USER'S MANUAL	**SUBJECT** SAROAD Multiple-Station Data Form	12/15/76		2

JOB TITLE SAROAD Multiple-Station Data Form

CARD TYPE 3

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
1	Card Type		1	1	X					X	"3"
2	State	2	3	2	X			X	X	X	
3	Agency		4	1		X				X	
4	Project	5	6	2	X			X	X	X	
5	Time		7	1	X	X				X	
6	Parameter Code	8	12	5	X			X	X	X	
7	Method	13	14	2	X			X	X	X	
8	Units	15	16	2	X			X	X	X	
9	DP		17	1	X					X	
10	Year	18	19	2	X			X	X	X	
11	Month	20	21	2	X			X	X	X	
12	Day	22	23	2	X			X	X	X	
13	Start Hour	24	25	2	X			X	X	X	
14	Area	26	29	4	X			X	X	X	
15	Site	30	32	3	X			X	X	X	
16	Value	33	36	4	X			X	X	X	

JOB TITLE SAROAD Multiple-Station Data Form

CARD TYPE 3 (Cont'd.)

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	PUNCH					VERIFY	REMARKS
		FROM	THRU		NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL		
17	Start Hour	37	38	2	X			X	X	X	
18	Area	39	42	4	X			X	X	X	
19	Site	43	45	3	X			X	X	X	
20	Value	46	49	4	X			X	X	X	
21	Start Hour	50	51	2	X			X	X	X	
22	Area	52	55	4	X			X	X	X	
23	Site	56	58	3	X			X	X	X	
24	Value	59	62	4	X			X	X	X	
25	Start Hour	63	64	2	X			X	X	X	
26	Area	65	68	4	X			X	X	X	
27	Site	69	71	3	X			X	X	X	
28	Value	72	75	4	X			X	X	X	

The Data Quality Information Sheet For Air Pollution Agencies produces one card from 4 pages of coding with the last two pages optional. Column 1 will always contain the numeral '1'. The card column number is given under each entry, and only columns which are coded will be keypunched.

JOB TITLE Data Quality Information Sheet for Air Pollution Agencies

CARD TYPE 1

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
1	Card Type	1	1	1	X			X	X	X	"1"
2	State	2	3	2	X			X	X	X	
3	Agency ID	4	6	3	X			X	X	X	
4	Year	7	8	2	X			X	X	X	
5	Month	9	10	2	X			X	X	X	
6	Agency Head	11	28	18		X	X				
7	Question 1	29	29	1		X				X	
8	Question 1a	30	31	2	X			X	X	X	
9	Question 2a	32	33	2	X			X	X	X	
10	Question 2b	34	35	2	X			X	X	X	
11	Question 2c	36	36	1		X				X	
12	Question 3a	37	37	1		X				X	
13	Question 3b	38	38	1		X				X	
14	Question 3c	39	39	1		X				X	
15	Question 4	40	40	1		X				X	
16	Question 4a	41	41	1		X				X	

ENVIRONMENTAL PROTECTION AGENCY	**SECTION** Keypunch Instructions	**SECTION** 4	**CHAPTER** 5	**SUBJECT** 1
NATIONAL AIR DATA BRANCH	**CHAPTER** Air Quality Assurance Data	**DATE** 12/15/76		**PAGE** 3
VOLUME III. AEROS SUMMARY AND RETRIEVAL MANUAL	**SUBJECT** Air Pollutant Agencies			

JOB TITLE Data Quality Information Sheet for Air Pollution Agencies

CARD TYPE 1 (Cont.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
17	Question 5	42	42	1	X					X	
18	Question 6	43	43	1		X				X	
19	Question 7	44	44	1		X				X	
20	Question 8	45	45	1		X				X	
21	Question 9	46	47	2	X			X	X	X	
22	Question 10	48	48	1		X				X	
23	Question 11	49	50	2	X			X	X	X	
24	Question 12	51	51	1		X				X	
25	Question 13	52	54	3	X			X	X	X	
26	Question 14	55	55	1		X				X	
27	Question 15	56	56	1		X				X	
28	Question 1	57	57	1		X				X	
	Opinion Poll										
29	Question 2	58	58	1		X				X	
30	Question 3	59	59	1		X				X	
31	Question 4	60	63	4	X			X		X	

JOB TITLE Data Quality Information Sheet for Air Pollution Agencies

CARD TYPE 1 (Cont.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
32	Question 5	64	67	4	X			X		X	
33	Question 6	68	71	4	X			X		X	
34	Question 7	72	77	6	X			X		X	
35	Question 8	78	78	1		X				X	
36	Action	80	80	1		X				X	

The Data Quality Information Sheet for Laboratories produces two unique cards from two forms. Column 1 always contains the numeral '2' for the first card and the numeral '3' for the second card. The card column numbers are given under each field, and only the fields which are coded will be keypunched.

JOB TITLE Data Quality Information Sheet For Laboratories

CARD TYPE 2

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
		FROM	THRU								
1	Card Type	1	1	1	X					X	"2"
2	State	2	3	2	X			X	X	X	
3	Lab I.D.	4	5	2		X		X	X	X	
4	Year	6	7	2	X			X	X	X	
5	Month	8	9	2	X			X	X	X	
6	Laboratory Name	10	34	25		X	X				
7	Laboratory St. Address	35	59	25		X	X				
8	City	60	79	20		X	X				
9	Action	80	80	1		X				X	

ENVIRONMENTAL PROTECTION AGENCY	**SECTION** Keypunch Instructions	**SECTION** 4	**CHAPTER** 5	**SUBJECT** 2
NATIONAL AIR DATA BRANCH	**CHAPTER** Air Quality Assurance Data	**DATE** 12/15/76		**PAGE** 3
VOLUME III. AEROS SUMMARY AND RETRIEVAL MANUAL	**SUBJECT** Laboratories			

JOB TITLE Data Quality Information Sheet For Laboratories

CARD TYPE 3

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
1	Card Type	1	1	1	X					X	'3'
2	State	2	3	2	X			X	X	X	
3	Lab ID	4	5	2		X		X	X	X	
4	Quality Control Officer	6	23	18		X	X				
5	Question 1	24	25	2	X			X	X	X	
6	Question 2	26	26	1		X				X	
7	Question 3	27	28	2	X			X	X	X	
8	Question 4	29	30	2	X			X	X	X	
9	Question 5	31	36	6	X			X		X	
10	Question 6	37	42	6		X	X			X	
11	Question 7	43	43	1		X				X	
12	Question 8	44	44	1		X				X	
13	Question 9	45	45	1		X				X	
14	Question 10	46	46	1		X				X	
15	Action	80	80	1		X				X	

The Data Quality Information Sheet for Air Pollution Sites produces one card from two pages of coding. Column 1 will always contain the numeral '4'. The card column numbers are given under each field, and only the fields which are coded will be keypunched.

ENVIRONMENTAL PROTECTION AGENCY	**SECTION** Keypunch Instructions	**SECTION** 4 / **CHAPTER** 5 / **SUBJECT** 3
NATIONAL AIR DATA BRANCH	**CHAPTER** Air Quality Assurance Data	**DATE** 12/15/76 / **PAGE** 2
VOLUME II. AEROS USER'S MANUAL	**SUBJECT** Air Pollution Sites	

JOB TITLE Data Quality Information Sheet For Air Pollution Sites

CARD TYPE 4

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
		FROM	THRU								
1	Card Type	1	1	1	X					X	'4'
2	State	2	3	2	X			X	X	X	
3	Area	4	7	4	X			X	X	X	
4	Site	8	10	3	X			X	X	X	
5	Agency	11	11	1		X				X	
6	Project	12	13	2	X			X	X	X	
7	Agency ID	14	16	3	X			X	X	X	
8	Year	17	18	2	X			X	X	X	
9	Month	19	20	2	X			X	X	X	
10	Question 1	21	26	6		X				X	
11	Question 2	27	27	1		X				X	
12	Question 3	28	28	1		X				X	
13	Question 4	29	29	1		X				X	
14	Question 5	30	30	1		X				X	
15	Question 6	31	31	1		X				X	
16	Question 6a	32	32	1		X				X	

JOB TITLE Data Quality Information Sheet For Air Pollution Sites

CARD TYPE 4 (Cont.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
17	Question 6b	33	33	1		X				X	
18	Question 6c	34	34	1		X				X	
19	Question 7	35	35	1		X				X	
20	Question 8	36	36	1		X				X	
21	Question 9	37	37	1		X				X	
22	Question 10	38	38	1		X				X	
23	Question 11	39	39	1		X				X	
24	Question 12	40	40	1	X		X			X	
25	Question 13	41	41	1		X				X	
26	Action	80	80	1		X				X	

The Data Quality Information Sheets For Total Suspended Particulate Measurement, SO_2 Measurement, NO_2 Measurement, CO Measurements, and Photochemical Oxidant Measurements produce five unique cards from ten coding sheets. Any one or all of these sheets may require keypunching for any site. Column 1 will always contain the numeral '5' for particulate, '6' for SO_2, '7' for NO_2, '8' for CO, or '9' for photochemical oxidants. The card column numbers are given under each field, and only the fields which are coded will be keypunched.

ENVIRONMENTAL PROTECTION AGENCY	**SECTION** Keypunch Instructions	**SECTION** 4	**CHAPTER** 5	**SUBJECT** 4
NATIONAL AIR DATA BRANCH	**CHAPTER** Air Quality Assurance Data	**DATE** 12/15/76	**PAGE** 2	
VOLUME II. AEROS USER'S MANUAL	**SUBJECT** Pollutants			

JOB TITLE Data Quality Information Sheet For Total Suspended Particulate MEASUREMENT (Hi-Vol sampler only)

CARD TYPE 5

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
1	Card Type	1	1	1	X					X	'5'
2	State	2	3	2	X			X	X	X	
3	Area	4	7	4	X			X	X	X	
4	Site	8	10	3	X			X	X	X	
5	Agency	11	11	1		X				X	
6	Project	12	13	2	X			X	X	X	
7	Year	14	15	2	X			X	X	X	
8	Month	16	17	2	X			X	X	X	
9	Lab I.D.	18	19	2		X		X	X	X	
10	Parameter Code	20	24	5	X					X	'11101'
11	Method Code	25	26	2	X			X	X	X	'91'
12	Sampler Brand	27	46	20		X	X			X	
13	Model Number	47	56	10		X	X			X	
14	Question 3a	57	57	1		X				X	
15	Question 4	58	58	1		X				X	
16	Question 5	59	59	1		X				X	

ENVIRONMENTAL PROTECTION AGENCY	**SECTION** Keypunch Instructions	**SECTION** 4	**CHAPTER** 5	**SUBJECT** 4
NATIONAL AIR DATA BRANCH	**CHAPTER** Air Quality Assurance Data	**DATE** 12/15/76		**PAGE** 3
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JOB TITLE Data Quality Information Sheet For Total Suspended Particulate MEASUREMENT (Hi-Vol sampler only)

CARD TYPE 5 (Cont.)

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
		FROM	THRU								
17	Question 6	60	60	1		X				X	
18	Question 7	61	61	1		X				X	
19	Question 8	62	62	1		X				X	
20	Question 9	63	63	1		X				X	
21	Question 10	64	64	1		X				X	
22	Question 11	65	65	1		X				X	
23	Question 12	66	66	1		X				X	
24	Question 13	67	68	2	X			X	X	X	
25	Action Code	80	80	1		X				X	

ENVIRONMENTAL PROTECTION AGENCY	**SECTION** Keypunch Instructions	**SECTION** 4	**CHAPTER** 5	**SUBJECT** 4
NATIONAL AIR DATA BRANCH	**CHAPTER** Air Quality Assurance Data	**DATE** 12/15/76		**PAGE** 4
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JOB TITLE Data Quality Information Sheet For SO_2 Measurement

CARD TYPE 6

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
1	Card Type	1	1	1	X					X	'6'
2	State	2	3	2	X			X	X	X	
3	Area	4	7	4	X			X	X	X	
4	Site	8	10	3	X			X	X	X	
5	Agency	11	11	1		X				X	
6	Project	12	13	2	X			X	X	X	
7	Year	14	15	2	X			X	X	X	
8	Month	16	17	2	X			X	X	X	
9	Lab I.D.	18	19	2		X		X	X	X	
10	Parameter Code	20	24	5	X					X	'42401'
11	Method Code	25	26	2	X			X	X	X	
12	Sampler Brand	27	46	20		X	X			X	
13	Model Number	47	56	10		X	X			X	
14	Question 3a	57	57	1		X				X	
15	Question 4	58	62	5		X	X			X	
16	Question 5	63	63	1		X				X	

ENVIRONMENTAL PROTECTION AGENCY	**SECTION** Keypunch Instructions	**SECTION** 4	**CHAPTER** 5	**SUBJECT** 4
NATIONAL AIR DATA BRANCH	**CHAPTER** Air Quality Assurance Data	**DATE** 12/15/76		**PAGE** 5
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JOB TITLE Data Quality Information Sheet For SO_2 Measurement

CARD TYPE D (Cont.)

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
		FROM	THRU								
17	Question 6	64	64	1		X				X	
	Continuous Sampler										
18	Question 7	65	65			X				X	
19	Question 8	66	66			X				X	
20	Question 9	67	67			X				X	
21	Question 10	68	68			X				X	
22	Question 11	69	69			X				X	
23	Question 12	70	70			X				X	
24	Question 12a	71	71			X				X	
25	Question 13	72	72			X				X	
	Bubbler Samplers										
26	Question 14	73	73			X				X	
27	Question 14a	74	74			X				X	
28	Question 15	75	75			X				X	
29	Question 16	76	76			X				X	
30	Question 17	77	77	1		X				X	

JOB TITLE Data Quality Information Sheet For SO_2 Measurement

CARD TYPE 6 (Cont.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
31	Question 18	78	78	1		X				X	
32	Action	80	80	1		X				X	

JOB TITLE Data Quality Control Information For NO_2 Measurement

CARD TYPE 7

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
1	Card Type	1	1	1	X					X	'7'
2	State	2	3	2	X			X	X	X	
3	Area	4	7	4	X			X	X	X	
4	Site	8	10	3	X			X	X	X	
5	Agency	11	11	1		X				X	
6	Project	12	13	2	X			X	X	X	
7	Year	14	15	2	X			X	X	X	
8	Month	16	17	2	X			X	X	X	
9	Lab I.D.	18	19	2		X		X	X	X	
10	Parameter Code	20	24	5	X					X	'42602'
11	Method Code	25	26	2	X			X	X	X	
12	Sampler Brand	27	46	20		X	X			X	
13	Model Number	47	56	10		X	X			X	
14	Question 3a	57	57	1		X					
15	Question 4	58	62	5		X	X		X	X	
16	Question 5	63	63	1		X				X	

JOB TITLE Data Quality Control Information For NO_2 Measurement

CARD TYPE 7 (Cont.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
17	Question 5a	64	64	1		X				X	
18	Question 6	65	65	1		X				X	
19	Question 7	66	66	1		X				X	
	Bubbler Samplers										
20	Question 8	67	67	1		X				X	
21	Question 8a	68	68	1		X				X	
22	Question 9	69	69	1		X				X	
23	Question 10	70	70	1		X				X	
	Continuous Samplers										
24	Question 11	71	71	1		X				X	
25	Question 12	72	72	1		X				X	
26	Question 13	73	73	1		X				X	
27	Question 14	80	80	1		X				X	
28	Action Code										

JOB TITLE Data Quality Control Information Sheet For CO Measurement

CARD TYPE 8

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
1	Card Type	1	1	1	X					X	'8'
2	State	2	3	2	X			X	X	X	
3	Area	4	7	4	X			X	X	X	
4	Site	8	10	3	X			X	X	X	
5	Agency	11	11	1		X				X	
6	Project	12	13	2	X			X	X	X	
7	Year	14	15	2	X			X	X	X	
8	Month	16	17	2	X			X	X	X	
9	Lab I.D.	18	19	2		X		X	X	X	
10	Parameter Code	20	24	5	X					X	'42101'
11	Method Code	25	26	2	X			X	X	X	
12	Sampler Brand	27	46	20		X	X			X	
13	Model Number	47	56	10		X	X			X	
14	Question 3a	57	57	1		X				X	
15	Question 4	58	62	5		X	X			X	
16	Question 5	63	63	1		X				X	

ENVIRONMENTAL PROTECTION AGENCY	**SECTION** Keypunch Instructions	**SECTION** 4	**CHAPTER** 5	**SUBJECT** 4
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JOB TITLE Data Quality Control Information Sheet For CO Measurement

CARD TYPE 8 (Cont.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
17	Question 6	64	64	1		X				X	
18	Question 7	65	65	1		X				X	
19	Question 8	66	66	1		X				X	
20	Question 9	67	67	1		X				X	
21	Question 10	68	68	1		X				X	
22	Question 11	69	69	1		X				X	
23	Question 12	70	70	1		X				X	
24	Action	80	80	1		X				X	

JOB TITLE Data Quality Control Information Sheet For Photochemical Oxidant Measurement

CARD TYPE 9

	NAME OF FIELD	COLUMNS		NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
		FROM	THRU								
1	Card Type	1	1	1	X					X	'9'
2	State	2	3	2	X			X	X	X	
3	Area	4	7	4	X			X	X	X	
4	Site	8	10	3	X			X	X	X	
5	Agency	11	11	1		X				X	
6	Project	12	13	2	X			X	X	X	
7	Year	14	15	2	X			X	X	X	
8	Month	16	17	2	X			X	X	X	
9	Lab I.D.	18	19	2		X		X	X	X	
10	Parameter Code	20	24	5	X					X	'44201' '44101'
11	Method Code	25	26	2	X			X	X	X	
12	Sampler Brand	27	46	20		X	X			X	
13	Model Number	47	56	10		X	X			X	
14	Question 3a	57	57	1		X				X	
15	Question 4	58	62	5		X	X			X	
16	Question 5	63	63	1		X				X	

JOB TITLE Data Quality Control Information Sheet For Photochemical Oxidant Measurement

CARD TYPE 9 (Cont.)

	NAME OF FIELD	COLUMNS FROM	COLUMNS THRU	NUMBER COLUMNS	NUMERIC	ALPHA	LEFT JUSTIFY	RIGHT JUSTIFY	ZERO FILL	VERIFY	REMARKS
17	Question 6	64	64	1		X				X	
18	Question 7	65	65	1		X				X	
19	Question 8	66	66	1		X				X	
20	Question 9	67	67	1		X				X	
21	Question 10	68	68	1		X				X	
22	Question 11	69	69	1		X				X	
23	Action Code	80	80	1		X				X	

In order to maintain and enhance the working relationships that currently exist between the Regional Offices, the State agencies, and other participants in the AEROS system, it is advisable that all AEROS transactions between these organizations and NADB be handled through the Regional Office. The control cycle thus established begins with the submission of raw data from the State agencies and continues through the distribution of final reports from NADB based on this data. This arrangement will not only effect a more efficient flow of data, but will also promote more effective performance of currently assigned tasks among all parties concerned.

There has been no distinction made between NEDS and SAROAD data since each is handled the same as related to the AEROS data auditing system (Section 7.0.0), the transmittal forms used in submitting the data to NADB (Section 6.3.1), and in the processing of requests (Volume III). For more detailed instructions which do address the differences in the subsystems of AEROS, attention should be given the appropriate sections within the AEROS Volume.

The functional flow of AEROS data through the Regional Office is portrayed in the following charts. These charts indicate the major decisions to be made concerning Regional Office handling of this material and the various subordinate processes that must be accomplished before the material is forwarded to its final destination.

Figure 6.1.1-a shows the relationship between the major types of AEROS material and the associated subordinate processes. As AEROS material is received by a Regional Office it can be identified as one of the following:

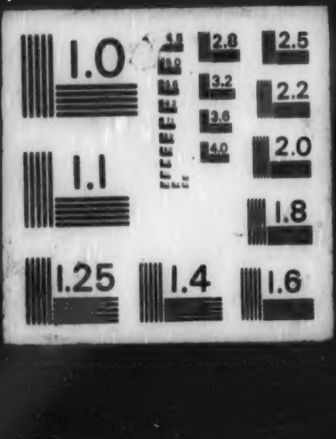
1. Data Submission
2. AEROS Audit Report
3. Request Information
4. Responses

This figure provides a decision chart which might be used by the Regional Office in daily AEROS processing. It references appropriate sections for more detailed procedures. For instance, all materials in any way associated with AEROS are initially screened to determine if the material is Data, Audit, Request, or Response. If the material is none of these, it is something which is not within the scope of this volume - such as additional AEROS documentation which must be handled as appropriate. Assume, however, that the material is Data and, further, that it is corrections to EDIT rejections. By following the Flow Chart, reference is made to Section 6.1.2, page 2. Since AEROS handles all data regardless of whether they are new data or corrections, the same section is

5 OF 5

PB

273391


1.0
2.8
2.5
3.2
2.2
3.6
4.0
2.0
1.1
1.8
1.25
1.4
1.6

ENVIRONMENTAL PROTECTION AGENCY	**SECTION** AEROS Data Flow	**SECTION** 6	**CHAPTER** 1	**SUBJECT** 1
NATIONAL AIR DATA BRANCH	**CHAPTER** Regional Office Processing	**DATE** 12/15/76		**PAGE** 2
VOLUME II. AEROS USER'S MANUAL	**SUBJECT** Introduction			

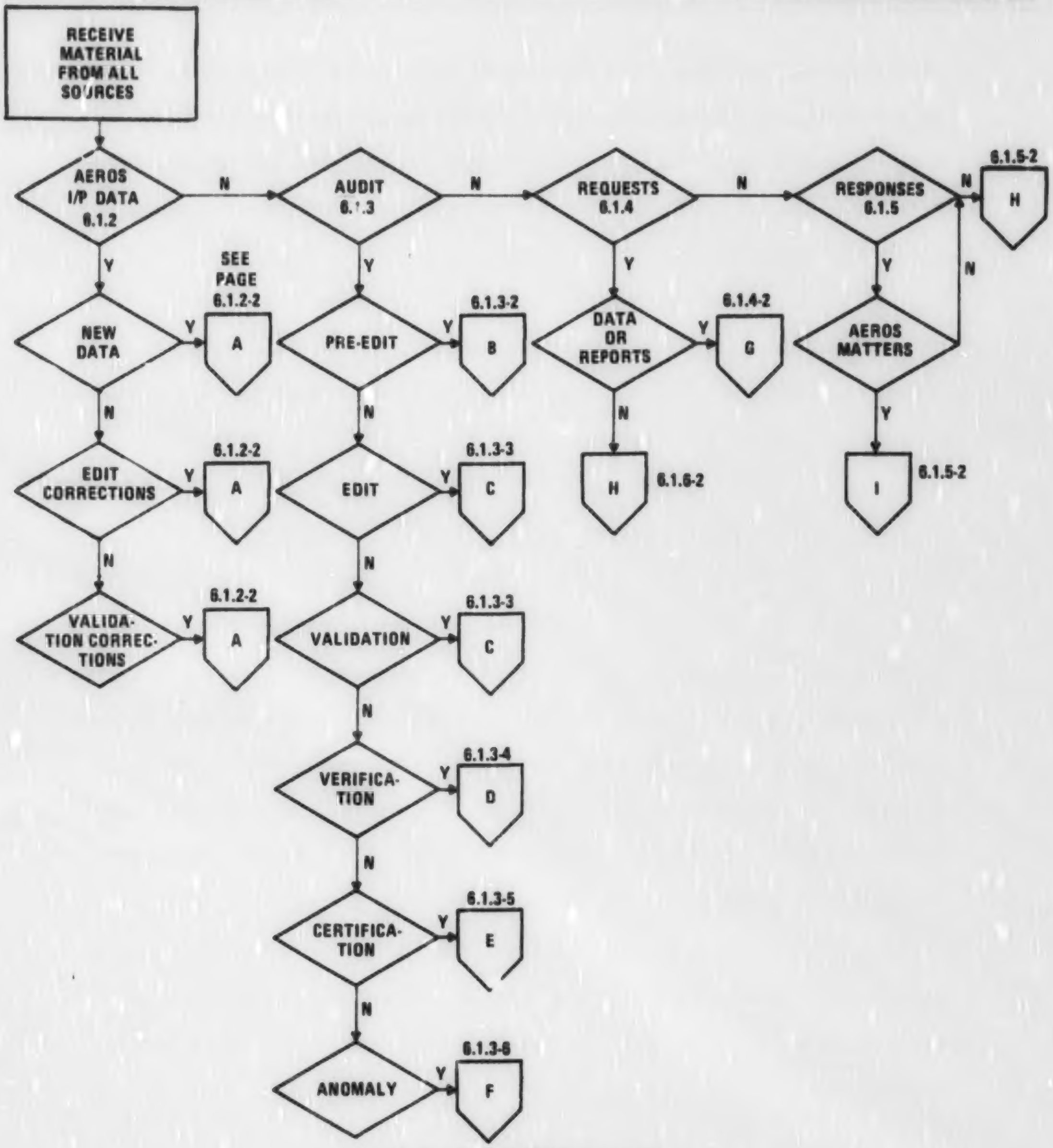
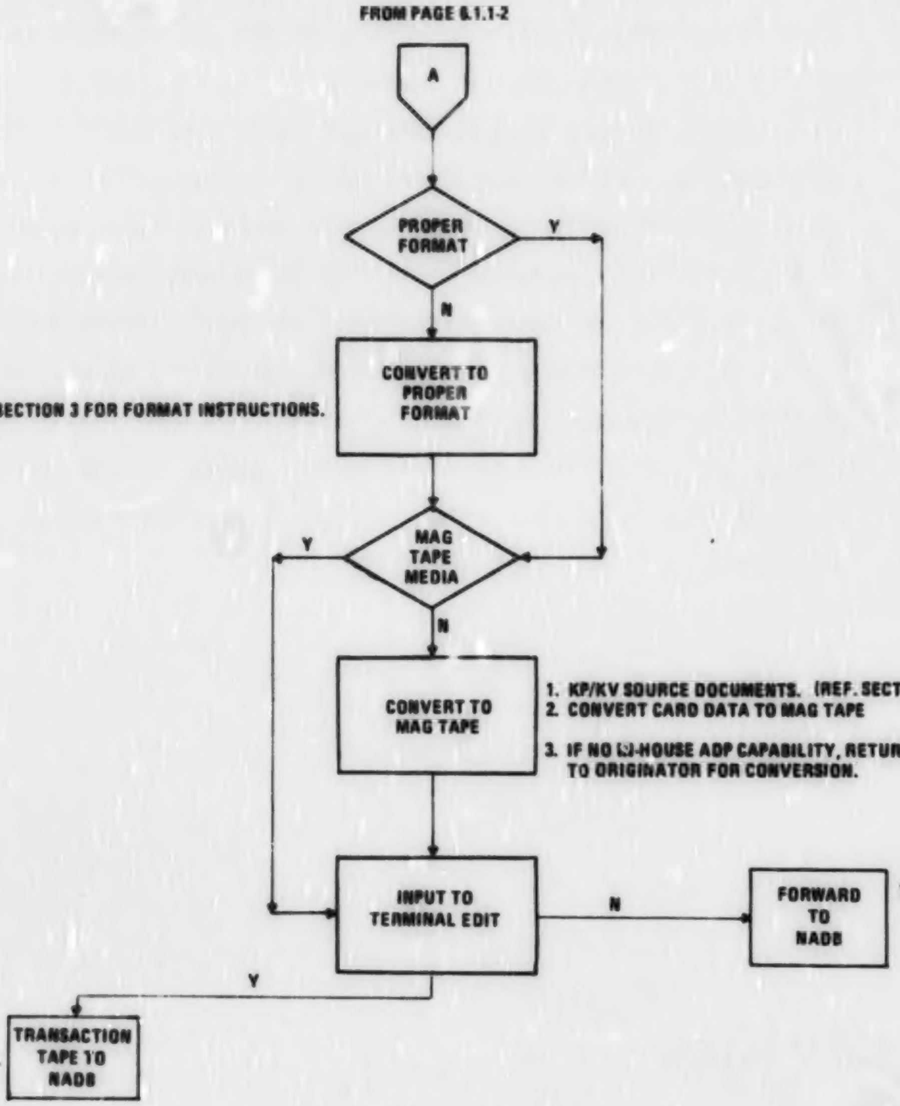

RECEIVE MATERIAL FROM ALL SOURCES
AEROS I/P DATA 6.1.2
N
AUDIT 6.1.3
N
REQUESTS 6.1.4
N
RESPONSES 6.1.5
N
6.1.5-2
H
Y
SEE PAGE 6.1.2-2
NEW DATA
Y
A
Y
PRE-EDIT
Y
6.1.3-2
B
Y
DATA OR REPORTS
Y
6.1.4-2
G
Y
N
AEROS MATTERS
N
6.1.2-2
EDIT CORRECTIONS
Y
A
N
EDIT
Y
6.1.3-3
C
N
H
6.1.6-2
Y
I
6.1.5-2
N
6.1.2-2
VALIDATION CORRECTIONS
Y
A
N
VALIDATION
Y
6.1.3-3
C
N
VERIFICATION
Y
6.1.3-4
D
N
CERTIFICATION
Y
6.1.3-5
E
N
ANOMALY
Y
6.1.3-6
F

Figure 6.1.1-a. AEROS data flow.

referenced in all cases. By referring to Section 6.1.2, page 2, it is found that the data must be in or converted to the proper SAROAD or NEDS format before the data can be processed by the Regional Office through the Terminal Edit Procedures.

AEROS input data are checked by the Regional Office to see that they are in the proper format (in the case of forms and cards). Improperly formatted data are useless and must be reformatted by the Regional Office or returned to the originator for reformatting. Data that are received in a media form other than keypunched cards or magnetic tape must be converted either by the originator or the Regional Office. When the requirements of format and media have been satisfied, the Regional Office utilizes the Terminal Edit Procedures to create the transaction tapes from the data. The Regional Office forwards the information that is necessary to process these transaction tapes to NADB utilizing the procedures outlined in Section 6.3.1 of this volume. If communication problems do not permit use of the Terminal Edit Procedures, the Regional Office forwards the data to NADB utilizing the procedures outlined in Section 6.3.1.


FROM PAGE 6.1.1-2
A
PROPER FORMAT
Y
N
CONVERT TO PROPER FORMAT
MAG TAPE MEDIA
Y
N
CONVERT TO MAG TAPE
INPUT TO TERMINAL EDIT
N
FORWARD TO NADB
Y
TRANSACTION TAPE TO NADB

1. REF. SECTION 3 FOR FORMAT INSTRUCTIONS.

1. KP/KV SOURCE DOCUMENTS. (REF. SECTION 4).
2. CONVERT CARD DATA TO MAG TAPE
3. IF NO IN-HOUSE ADP CAPABILITY, RETURN TO ORIGINATOR FOR CONVERSION.

1. REF. SECT. 6.2.0

1. REF. SECT. 6.3.1

Figure 6.1.2-a. Data submission.

Pre-Edit and Edit lists are generated by the Regional Office using Terminal Edit. Post-Edit and Update/Validation lists are received by the Regional Office from NADB. Pre-Edit lists are checked for obvious and consistent errors, these are noted, and the lists are forwarded to State agencies without delay. Post-Edit lists are reviewed by the Regional Office to determine the data to be updated and forwarded to State agencies. Edit/Update/Validation lists are checked to determine if the errors noted (if any) are correctable by the Regional Office. If the Regional Office can make the corrections in-house, this is done. The corrections are forwarded to NADB and the State agency is so notified. Errors not correctable in-house are forwarded to the State agency for correction.

Requests for verification of data are forwarded to the appropriate organization, usually the data originator. Answers to verification requests are forwarded to the initiator without delay.

Data to be certified are received by the Regional Office and forwarded to certifying parties without delay. Likewise, certification results are received and forwarded to NADB.

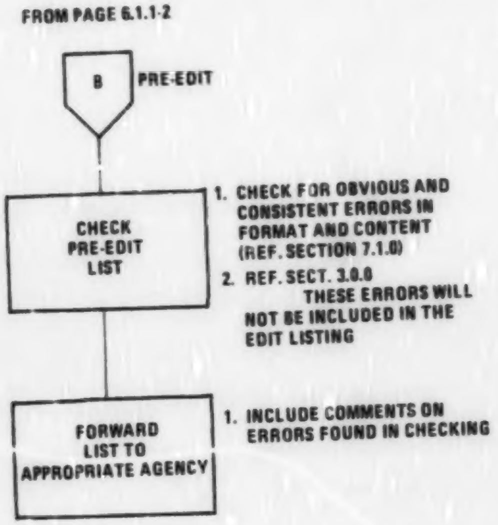
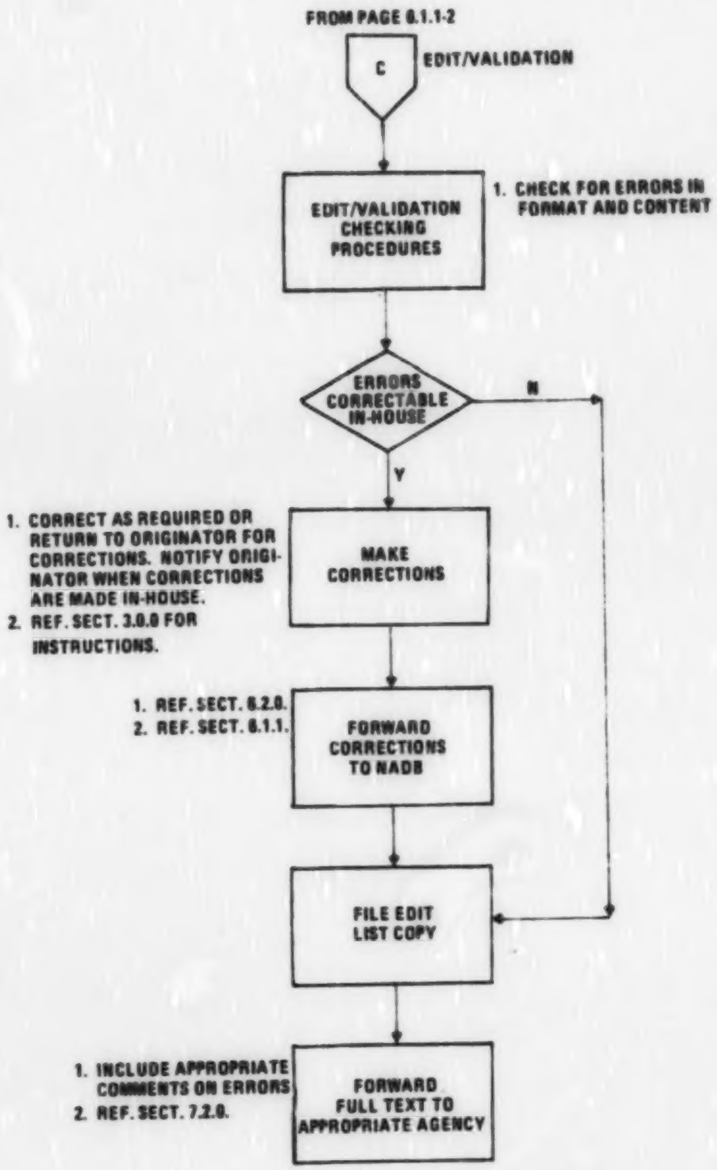

FROM PAGE 6.1.1-2
B
PRE-EDIT
CHECK PRE-EDIT LIST
1. CHECK FOR OBVIOUS AND CONSISTENT ERRORS IN FORMAT AND CONTENT (REF. SECTION 7.1.0)
2. REF. SECT. 3.0.0 THESE ERRORS WILL NOT BE INCLUDED IN THE EDIT LISTING
FORWARD LIST TO APPROPRIATE AGENCY
1. INCLUDE COMMENTS ON ERRORS FOUND IN CHECKING

Figure 6.1.3-a. Audit processing.


FROM PAGE 6.1.1-2
C
EDIT/VALIDATION
EDIT/VALIDATION CHECKING PROCEDURES
ERRORS CORRECTABLE IN-HOUSE
N
Y
MAKE CORRECTIONS
FORWARD CORRECTIONS TO NADB
FILE EDIT LIST COPY
FORWARD FULL TEXT TO APPROPRIATE AGENCY

1. CHECK FOR ERRORS IN FORMAT AND CONTENT

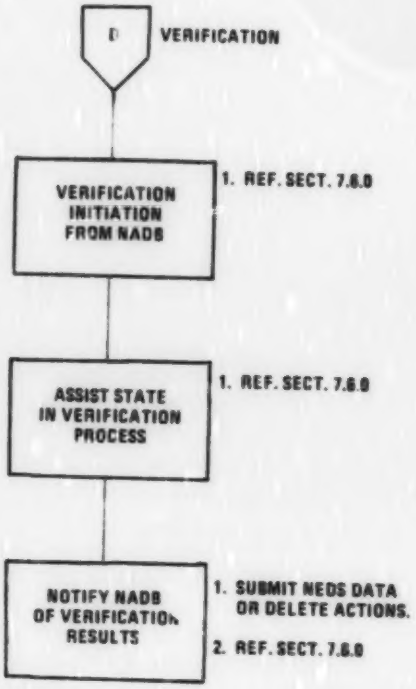
1. CORRECT AS REQUIRED OR RETURN TO ORIGINATOR FOR CORRECTIONS. NOTIFY ORIGINATOR WHEN CORRECTIONS ARE MADE IN-HOUSE.
2. REF. SECT. 3.0.0 FOR INSTRUCTIONS.

1. REF. SECT. 6.2.0.
2. REF. SECT. 6.1.1.

1. INCLUDE APPROPRIATE COMMENTS ON ERRORS
2. REF. SECT. 7.2.0.

Figure 6.1.3-b. Audit processing.

FROM PAGE 6.1.1-2



D
VERIFICATION
VERIFICATION INITIATION FROM NADB
1. REF. SECT. 7.6.0
ASSIST STATE IN VERIFICATION PROCESS
1. REF. SECT. 7.6.0
NOTIFY NADB OF VERIFICATION RESULTS
1. SUBMIT NEDS DATA OR DELETE ACTIONS.
2. REF. SECT. 7.6.0

Figure 6.1.3-c. Audit processing.

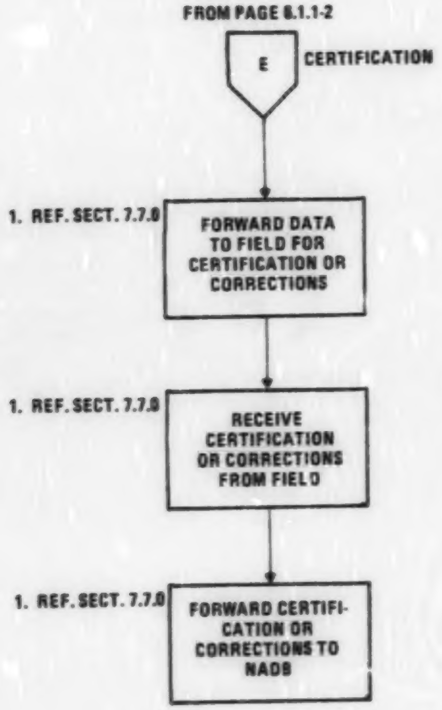

FROM PAGE 6.1.1-2
E
CERTIFICATION
1. REF. SECT. 7.7.0
FORWARD DATA TO FIELD FOR CERTIFICATION OR CORRECTIONS
1. REF. SECT. 7.7.0
RECEIVE CERTIFICATION OR CORRECTIONS FROM FIELD
1. REF. SECT. 7.7.0
FORWARD CERTIFICATION OR CORRECTIONS TO NADB

Figure 6.1.3-d. Audit processing.

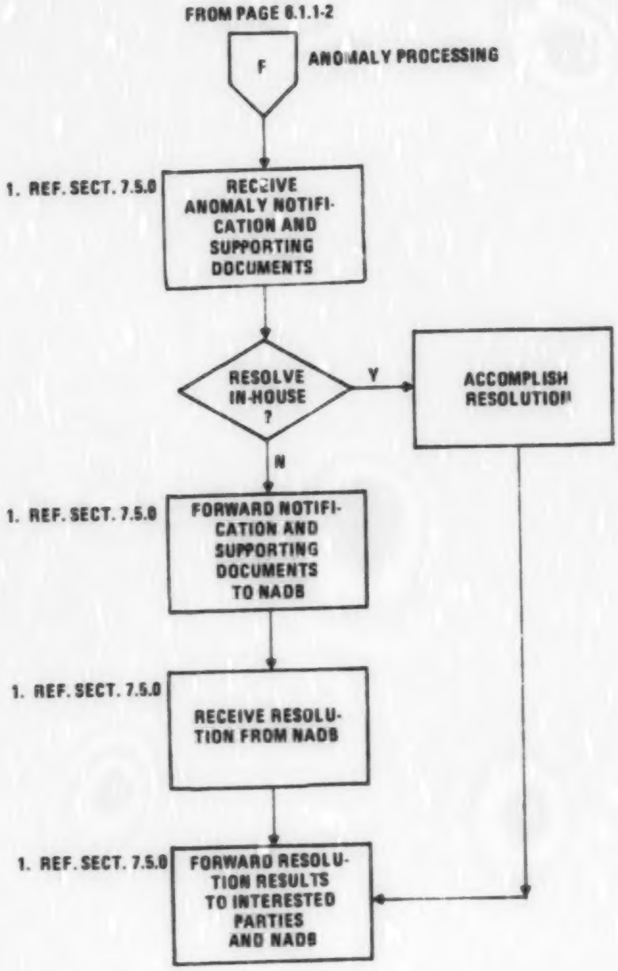

FROM PAGE 6.1.1-2
F
ANOMALY PROCESSING
1. REF. SECT. 7.5.0
RECEIVE ANOMALY NOTIFICATION AND SUPPORTING DOCUMENTS
RESOLVE IN-HOUSE ?
Y
ACCOMPLISH RESOLUTION
N
1. REF. SECT. 7.5.0
FORWARD NOTIFICATION AND SUPPORTING DOCUMENTS TO NADB
1. REF. SECT. 7.5.0
RECEIVE RESOLUTION FROM NADB
1. REF. SECT. 7.5.0
FORWARD RESOLUTION RESULTS TO INTERESTED PARTIES AND NADB

Figure 6.1.3-e. Audit processing.

Requests for data, reports, etc., are received by the Regional Office and checked to see if they can be answered at the Regional Office level. If so, the reply is formulated and sent to the requestor. If the answer to the request is beyond the scope of the Regional Office, the request is forwarded to the organization best able to provide the answer.

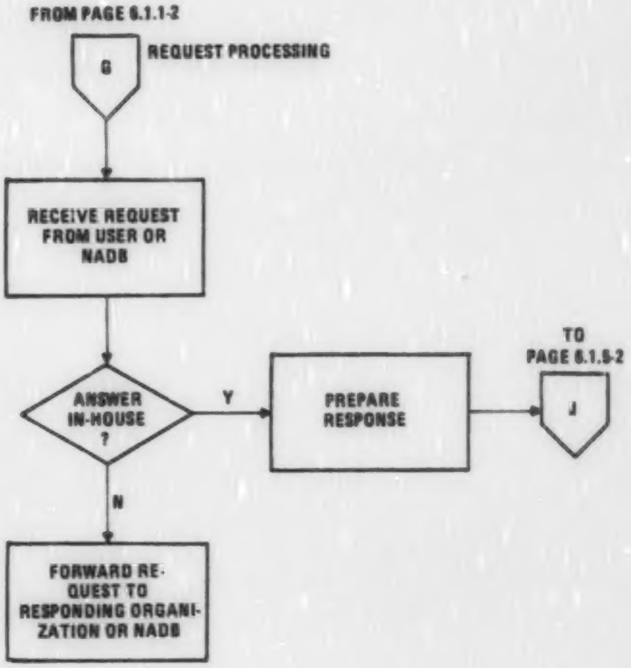

FROM PAGE 6.1.1-2
G
REQUEST PROCESSING
RECEIVE REQUEST FROM USER OR NADB
ANSWER IN-HOUSE ?
Y
PREPARE RESPONSE
TO PAGE 6.1.5-2
J
N
FORWARD REQUEST TO RESPONDING ORGANIZATION OR NADB

Figure 6.1.4-a. Request processing.

Responses to previous requests are received by the Regional Office and forwarded to the requesting party. Responses involving audit processing of data must be given priority handling.

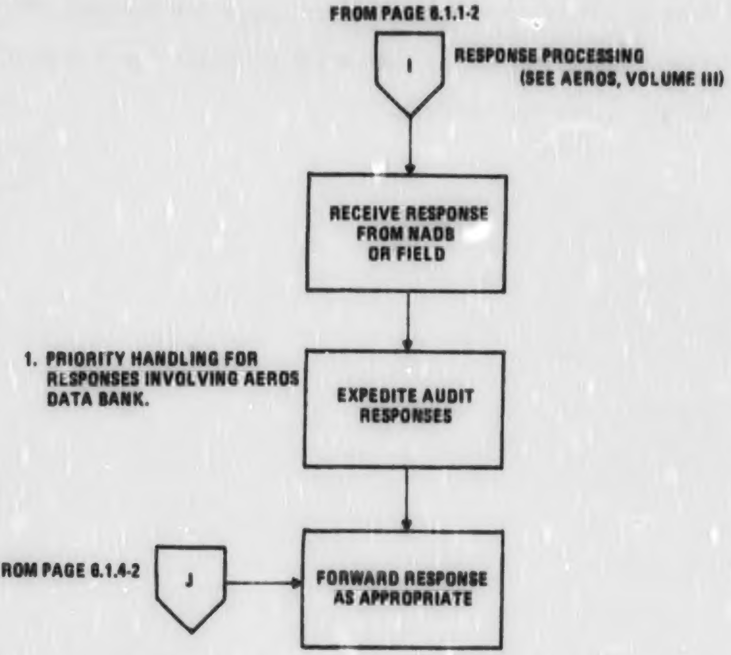

FROM PAGE 6.1.1-2
I
RESPONSE PROCESSING
(SEE AEROS, VOLUME III)
RECEIVE RESPONSE FROM NADB OR FIELD
1. PRIORITY HANDLING FOR RESPONSES INVOLVING AEROS DATA BANK.
EXPEDITE AUDIT RESPONSES
FROM PAGE 6.1.4-2
J
FORWARD RESPONSE AS APPROPRIATE

Figure 6.1.5-a. Response processing.

Procedures for handling miscellaneous AEROS correspondence will be established by the individual Regional Office.

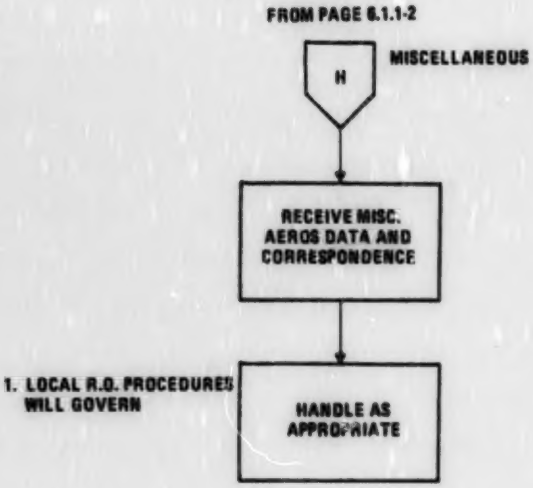

FROM PAGE 6.1.1-2
H
MISCELLANEOUS
RECEIVE MISC. AEROS DATA AND CORRESPONDENCE
1. LOCAL R.O. PROCEDURES WILL GOVERN
HANDLE AS APPROPRIATE

Figure 6.1.6-a. Miscellaneous.

PURPOSE

The use of the "AEROS Data Control Log" (Figure 6.2.1-a) by the Regional Offices is suggested as a means of monitoring the flow of transactions between NADB, the Regional Office, State agencies, and other users of the AEROS system.

The purpose of the AEROS Data Control Log is to provide a method of assisting the Regional Office in managing the flow of data throughout the AEROS system.

Certain information may be derived from this log that will provide invaluable assistance in improving data handling methods and procedures, thereby enhancing EPA's capability to provide timely and accurate information.

In order to achieve this goal, it is required that these data control procedures be strictly adhered to and that entries in the log be legible and complete.

It is anticipated that rather than create an additional clerical burden, the keeping of this log will replace various procedures now in use and will materially assist in increasing the overall efficiency of the AEROS system and the timeliness of the data entry and reporting processes.

The AEROS Data Control Log should be used solely to assist in managing the flow of data and other pertinent information within the AEROS system. The use of this form for logging other than AEROS data will only confuse the AEROS monitoring function and such use should be avoided.

PROCEDURE

The AEROS Data Control Log will be completed as follows. The numbered explanations refer to the numbered areas on the sample form (Figure 6.2.1-a).

1. RCPT DATE -- Enter the date these data were received by the Regional Office in the form YYMMDD (e.g., June 12, 1974, would be written 740612).
2. ORIGIN -- Enter the code for the organization from which the Regional Office received these data (e.g., N.C. State Agency).
3. DESCRIPTION -- Enter a brief description of the data received.
4. MEDIA -- Enter single character code as follows, depending on the form in which these data are received.

   R - Mag Tape

   C - Keypunched Cards

   F - Forms

   X - Other
5. TYPE -- Enter single character code as follows, depending on the type of data being submitted.

   E - Emissions data

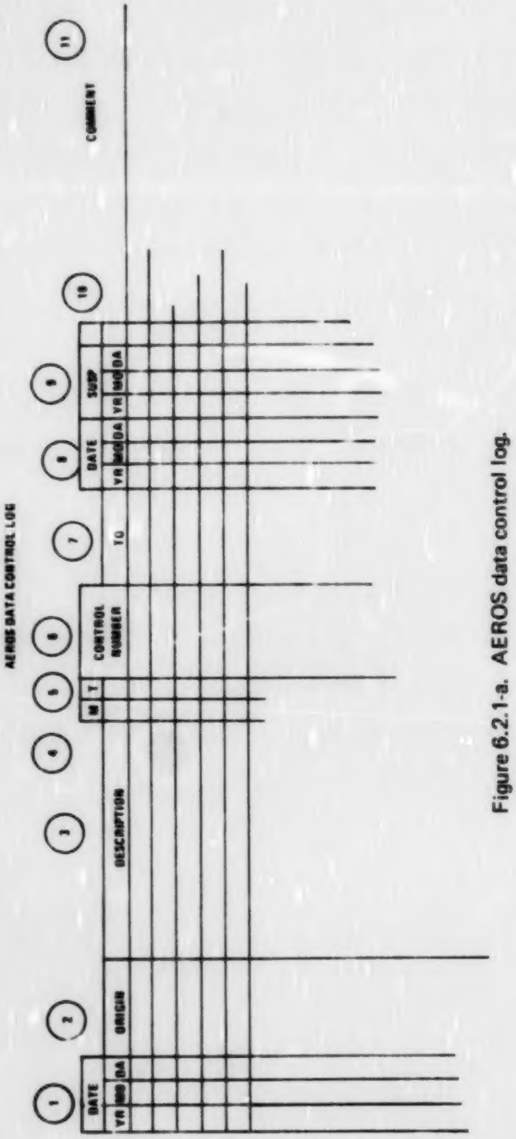
   Q - Air Quality data

   S - Site ID data
6. CONTROL NUMBER -- Regional Office should assign a control number to these data. This number will not be the same as the

AEROS Control ID assigned by NADB. (See item No. 7)

7. TO -- Enter the code for the organization to which these data are to be sent. (e.g., NADB..........) AEROS Control Identification Code, if appropriate (on receipt of the Inventory of Data Received or Post-Edit Inventory).
8. FWD DATE -- Enter the date on which these data were forwarded by the Regional Office in the same form as for RCPT DATE above.
9. SUSP -- If applicable, enter the date by which these data must be returned to the Regional Office to maintain established schedule.
10. SUSP CHK -- Enter ( ) if data were returned on or before suspense date.
11. COMMENT -- Enter any additional information that would clarify the status of these data.

This form should be modified by each Regional Office as appropriate to its needs.



AEROS DATA CONTROL LOG
①
DATE
YR
MO
DA
②
ORIGIN
③
DESCRIPTION
④
⑤
M
T
⑥
CONTROL NUMBER
⑦
TO
⑧
DATE
YR
MO
DA
⑨
SUSP
YR
MO
DA
⑩
⑪
COMMENT

Figure 6.2.1-a. AEROS data control log.

Magnetic tapes that are submitted to NADB containing AEROS data must be accompanied by information on the data and magnetic tape. The information should be entered on the Magnetic Tape FILE Transmittal Form (MTFTF) (Figure 6.3.1-a) and mailed to the Data Processing Section, NADB, either with the tape or with notification that the tape is currently at NCC. The information for any tape created using the terminal edit procedure may be telephoned in to the Data Processing Section, but a MTFTF should also be submitted.

The MTFTF will be completed in accordance with the following instructions. The explanations refer to the sample form in Figure 6.3.1-a.

1. ORIGINATOR - The name of the local, State, or Regional Office submitting the data.
2. R.O. CONTROL - The unique R.O. control identification code, if one is used.
3. FILE # - The file number for this tape where the data can be found. Each unique file number (data set) must be recorded on a separate MTFTF.
4. REEL # - The number assigned by the submitting organization to this physical reel of tape.
5. DATA DESC - Short description of the data contained on this file including quarter, year, and any special information. If the tape was created on the UNIVAC 1110, the file name, including the qualifier, must be entered here.

6. DENSITY - Character density at which this tape was created (e.g. 556, 800, etc.).
7. TRACKS - Indicate whether 7 or 9 track tape.
8. PARITY - Check "odd" or "even."
9. CREATED ON - Indicate computer this tape was created on (e.g. IBM 1410, IBM 360, SPECTRA 70, UNIVAC 1108, etc.).
10. LANG USED - Indicate programming language or utility program used to create file (COPY, TAPETRAN, COBOL, FORTRAN, etc.).
11. FILE TYPE - Indicate type of file (e.g. SDF, ASCII COBOL, IBM, etc.).
12. CHARACTER CODE - Indicate character code (e.g. ASCII, EBCDIC, FIELDATA, etc.).
13. RECORDS - Enter exact number or close approximation of number of records.
14. REC. LENGTH - Enter the record length (fixed records only).
15. BLOCK SIZE - Enter the size of blocked records.
16. HDR-LABEL - Enter description of header label. If standard label, so indicate.
17. TRLR-LABEL - Enter description of trailer label. If standard label, so indicate.
18. OTHER - Enter other pertinent data that may be of value in processing this tape.

MAGNETIC TAPE FILE TRANSMITTAL FORM

(ONE FORM REQUIRED FOR EACH TAPE FILE)

ORIGINATOR ______________________________

R.O. CONTROL # ______________

FILE # ______________

REEL # ______________

DATA DESC: ______________________________

____

DENSITY: __________ TRACKS: __________ PARITY: __________

CREATED ON: ______________ LANG. USED: ______________

FILE TYPE: ______________ CHARACTER CODE: ______________

RECORDS: ______________ REC LENGTH: ______________

BLOCK SIZE: ______________

HDR - LABEL: ______________________________

TRLR - LABEL: ______________________________

OTHER: ______________________________

____

____

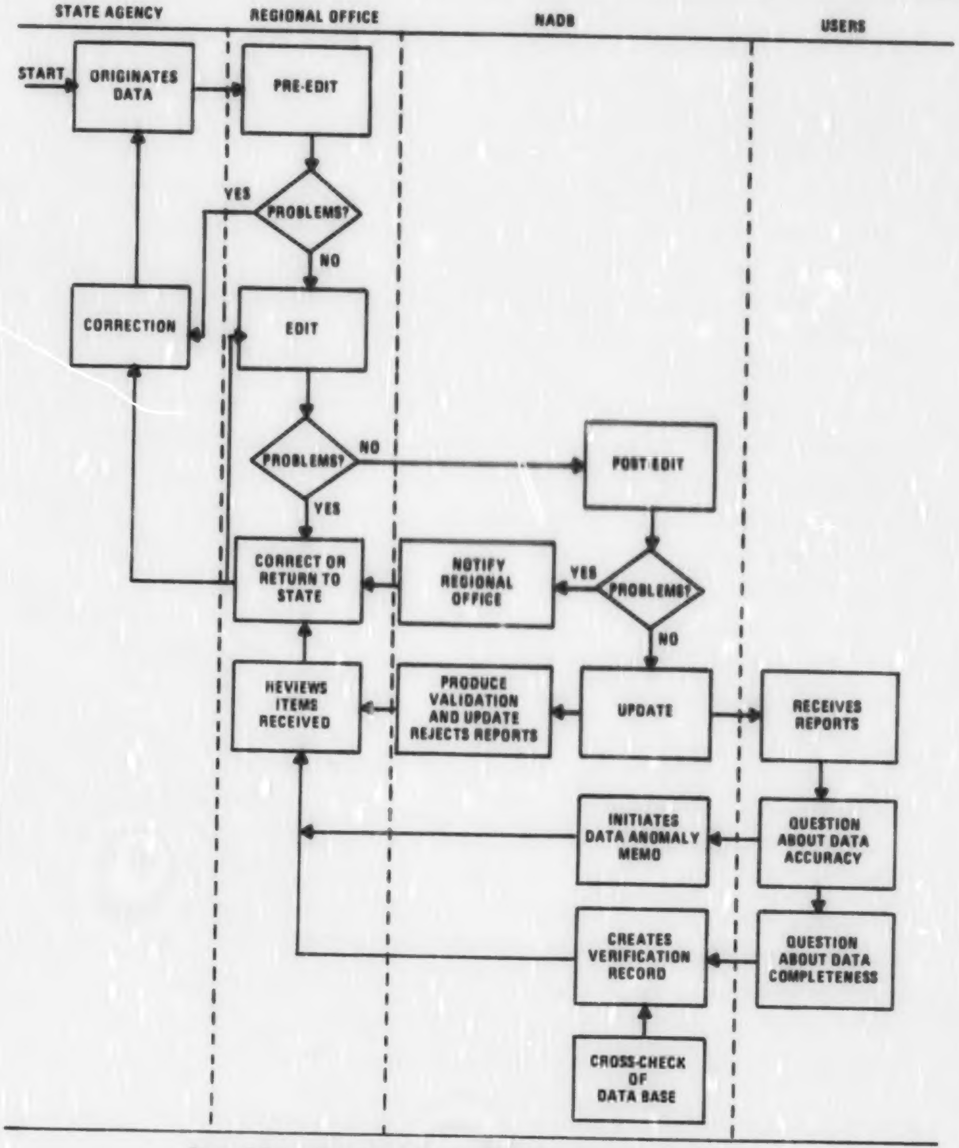
____

Figure 6.3.1-a. Magnetic Tape File Transmittal Form.

The National Air Data Branch (NADB) has finalized plans and procedures to assure the integrity of the data contained in the National Emissions Data System (NEDS) and the Storage and Retrieval of Aerometric Data (SAROAD) system. These data will be used to analyze progress under State Implementation Plans (SIPs), provide status of and progress under New Source Performance Standards (NSPS), and establish a standard data base which will facilitate other similar or related analysis functions. It is essential, therefore, that this data be as accurate and as complete as possible.

The AEROS Data Auditing System is the vehicle by which incoming data are screened to ensure that reasonable and accurate data are updated to AEROS files. It also provides procedures whereby questions raised by users about data already in the files can be resolved. Some of the steps of the AEROS Data Auditing System are computer programs which examine the data and reject incorrect items or produce error listings identifying questionable items. Figure 7.0.1-a illustrates the various steps of the AEROS Data Auditing System as they are employed by EPA Regional Offices and NADB.

The first step in the data auditing procedure is the PRE-EDIT INVENTORY OF DATA RECEIVED which is run by EPA Regional Offices to ascertain the quantity and identity of data received from state agencies. The Regional Offices then employ the EDIT procedure to check the incoming data. The EDIT programs identify and reject data records which do not meet minimum criteria for updating of AEROS files. Corrections to the records rejected by the EDIT program are made by the Regional Office or referred by the Regional Office to the appropriate state agency for correction. Records which pass EDIT are forwarded to NADB



STATE AGENCY
REGIONAL OFFICE
NADB
USERS
START
ORIGINATES DATA
PRE-EDIT
PROBLEMS?
YES
NO
CORRECTION
EDIT
PROBLEMS?
NO
YES
POST-EDIT
CORRECT OR RETURN TO STATE
NOTIFY REGIONAL OFFICE
YES
PROBLEMS?
NO
REVIEWS ITEMS RECEIVED
PRODUCE VALIDATION AND UPDATE REJECTS REPORTS
UPDATE
RECEIVES REPORTS
INITIATES DATA ANOMALY MEMO
QUESTION ABOUT DATA ACCURACY
CREATES VERIFICATION RECORD
QUESTION ABOUT DATA COMPLETENESS
CROSS-CHECK OF DATA BASE

Figure 7.0.1 a. Data flow through AEROS Data Auditing System.

for updating or held until corrections are completed.

Upon receipt of each data set, NADB runs the POST-EDIT INVENTORY OF DATA RECEIVED report. This report is similar to the PRE-EDIT report. It is used to verify that the data received from the Regional Office correspond to the set of data which the Regional Office indicates was being submitted. Any discrepancies are brought to the attention of the Regional Office. If no problems are indicated by the POST-EDIT report, NADB proceeds with the UPDATE of information received from the Regional Office. Each data set received is assigned a control ID number for subsequent tracking purposes. As a part of the UPDATE process VALIDATION reports may be generated. These reports identify suspect data values on the basis of a comparison between the submitted data and predetermined criteria concerning minimum and maximum limits, deviations from average values, etc. The suspect data are entered into the data bank, but a VALIDATION report is forwarded to the Regional Office. The UPDATE also includes a limited number of UPDATE EDIT checks which identify and reject records with critical errors that would prevent proper updating of AEROS files. These rejected records are identified in a report which is returned to the Regional Office for correction of the errors.

It is the responsibility of the data originator to change any incorrect values brought to his attention through the VALIDATION report. Failure to submit any changes for the suspect data will constitute an implicit VALIDATION that the data in question are correct. NADB may also specify that the data contained in various reports be explicitly CERTIFIED prior to publication. In these instances, pre-publication copies of the reports are submitted to the data originators who review the data contained therein and either CERTIFY that they are correct or submit required corrections.

Once data have been entered into the appropriate data bank, a large number of computerized reports are generated routinely and on request from interested individuals. As these reports are circulated, suspicious data are occasionally discovered by the requestor and he, in turn, requests NADB to check the value or values to ensure their accuracy. This request triggers a DATA ANOMALY INVESTIGATION.

Occasionally the question arises as to whether certain air quality sampling sites or emission sources actually exist. In other cases there may be indications that there is a previously unreported emission source in a certain area. NADB may initiate a VERIFICATION search to determine whether or not such a source exists, and such data as are available may be temporarily stored in the special data bank pending the outcome of the investigation. If the existence of such a source is VERIFIED, the available data are added to the appropriate file. If VERIFICATION is negative, these data are removed from storage.

The following subjects discuss each part of the AEROS Data Auditing System in more detail.

The processing schedule followed by the National Air Data Branch (NADB) is based on a 2-week cycle. Occasionally this cycle is interrupted for special updates or systems problems. The schedule for all SAROAD and NEDS updates is maintained on the INFO messages data set described below.

NADB, through the Data Processing Section, maintains three message data sets which reside on the U1110 and are accessable via a demand terminal. The three data sets are as follows:

NADB*AERO-MESSAGE.INFO
  Contains general information and should be accessed each Wednesday for new information.
NADB*AERO-MESSAGE.SAROAD-UPD
  Contains SAROAD control IDs for updated data sets.
NADB*AERO-MESSAGE.NEDS-UPD
  Contains NEDS control IDs for updated data sets.

The INFO data set will reference the SAROAD and NEDS messages when an update has been completed. To access any of these data sets, enter:

```
@PRT,S NADB*AERO-MESSAGE.eltname
```

The NEDS Pre-Edit program (NE026) enables the EPA Regional Offices to determine the quantity and identity of NEDS data submitted for processing. NE026 requires one minute to process approximately 1500 NEDS card-image records.

NE026 reads NEDS card-image (80-character) records from a standard-labeled magnetic tape file blocked 50 records. As each record is read, it is reformatted to facilitate sorting and then released to an internal COBOL sort. The sort places the records in area source, point source, and unverified point source groups respectively. The area source group is further sorted on state, county, AQCR, and year-of-record. Additional sorts on point source and unverified point source records are: state, county, AQCR, plant, and year-of-record.

Up to three inventory reports will be produced by NE026 depending on the number of data types (area, point, unverified point) present on the input tape. Each report line shows the number of add, change, and delete transactions submitted for a particular group of sort keys and card types (1-7). Page breaks are taken when a different state is encountered.

If the input tape contains records which can't be classified for the inventory reports because of invalid card type, action code, or data type, they will not be included in the report. They will, however, be listed with an appropriate error message prior to any report data. The user has the option, through the use of a control card, of printing all input records in input format.

NE026 does not create or modify any cataloged mass-storage files nor does it require any previously created files other than the input tape file. It is written in ASCII COBOL for use on the UNIVAC 1110 computer system at Research Triangle Park, N. C.

Figure 7.1.1-a is an example of a NEDS pre-edit input listing. For records where an error is detected an error message is printed. Possible error messages produced by NE026 are:

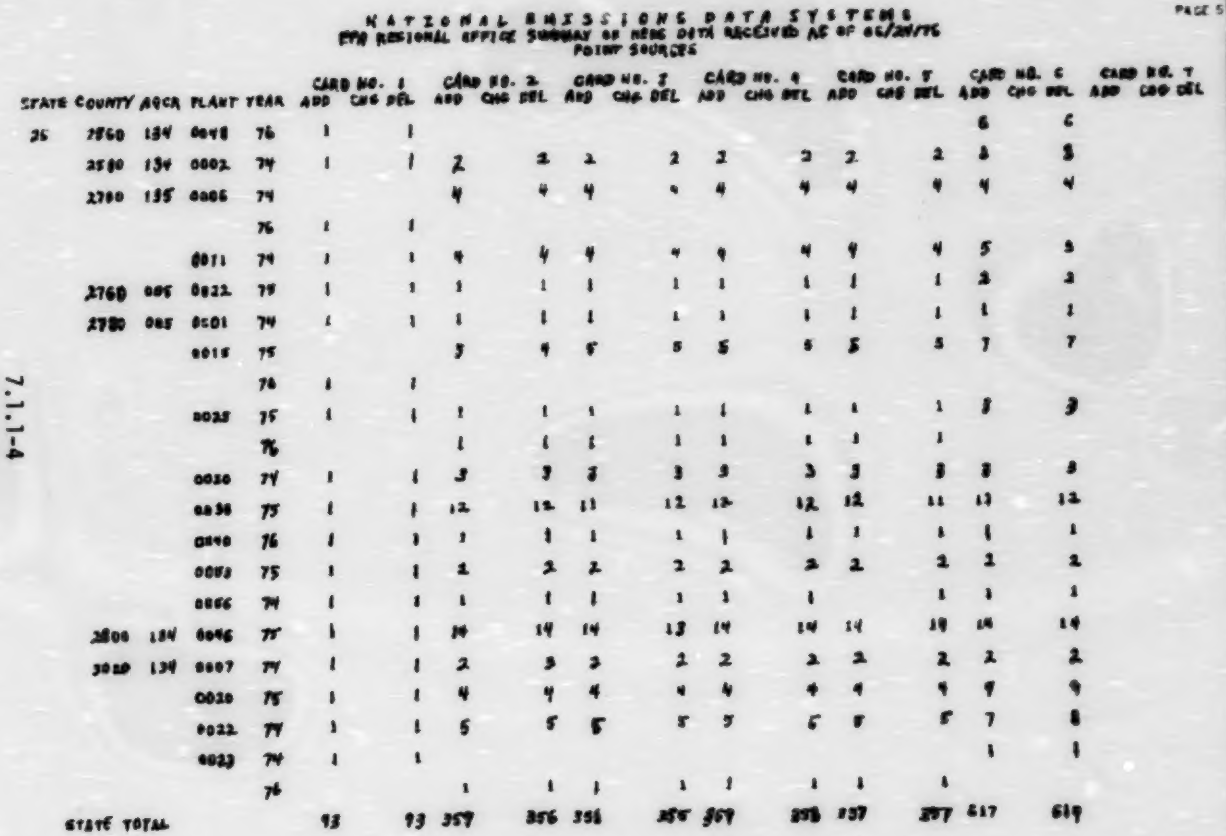
1. NO PRINT CONTROL CARD PRESENT--NE026 TERMINATED.
   Explanation: Self explanatory
2. NO YEAR AVAILABLE FOR THIS CARD-IMAGE
   Explanation: Notational comment-the record is included in the report data with a blank year.
3. The following three error messages indicate the card-image cannot be classified for reporting and are therefore not included in the reports:
   (a) ONLY A, C, OR D ALLOWED IN COL. 78
   (b) ONLY A, P, OR V ALLOWED IN COL. 79
   (c) ONLY 1 THROUGH 7 ALLOWED IN COL. 80
   The records for which these errors are indicated should be corrected before processing through the NEDS EDITOR program, NE061.

Figure 7.1.1-b shows the EPA Regional Office Summary of NEDS Data Received which is generated by NE026. A report in this format is generated for each data type (area, point, unverified point) present

```
                                          NEDS PRE-EDIT INPUT LISTING 03/24/76
                                                                                                ERROR MESSAGE
RECORD NO.                   C A R D   I M A G E
    417   1240500128000201  3020060400007280                                      P1   DP61 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
    626   1240560129000604                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
    634   1240560129000605                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
    639   1240560129000606                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
    644   1240560129000607                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
    649   1240560129000608                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
    654   1240560129000609                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
    659   1240560129000610                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
    664   1240560129000611                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
    669   1240560129000612                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
    674   1240560129000613                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
    679   1240560129000614                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
    684   1240560129000615                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
    689   1240560129000616                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
  1,657   1240340131001602                  C00006000003990000000000000004             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
                                                                        2
  2,393   1241840129000305  0000423                                                    DP41 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
  3,665   1242720132000202              000446000005205                           2    DP61 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
  3,671   1242720132000202  10200202             096061                                DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
  3,961   1242940131000505                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
  3,965   1242940131000506                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
  3,971   1242940131000507                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
  3,975   1242940131000508                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
  4,167   1242940131002103                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
  4,173   1242940131002104                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
  4,178   1242940131002105                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
  4,183   1242940131002106                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
  4,188   1242940131002107                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
  4,193   1242940131002108                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
  4,466   1242940131004301                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
  4,472   1242940131004302                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
  4,478   1242940131004303                                                             DPS1 NO YEAR AVAILABLE FOR THIS CARD-IMAGE
  4,393   1243060128000501  3010103390000200      00000000000BALLOONS             P2   DP61 NO YEAR AVAILABLE FOR THIS CARD-IMAGE

        6,476 NEDS RECORDS READ IN
            0 ERROR RECORDS, NOT INCLUDED IN THE FOLLOWING REPORTS
```

Figure 7.1.1-a. NEDS PreEdit Input Listing.



PAGE 5

NATIONAL EMISSIONS DATA SYSTEMS
EPA REGIONAL OFFICE SUMMARY OF NEDS DATA RECEIVED AS OF 06/24/76
POINT SOURCES

					CARD NO. 1			CARD NO. 2			CARD NO. 3			CARD NO. 4			CARD NO. 5			CARD NO. 6			CARD NO. 7		
STATE	COUNTY	AQCR	PLANT	YEAR	ADD	CHG	DEL	ADD	CHG	DEL	ADD	CHG	DEL	ADD	CHG	DEL	ADD	CHG	DEL	ADD	CHG	DEL	ADD	CHG	DEL
25	2560	134	0048	76	1		1													6		6			
	2580	134	0002	74	1		1	2		2	2		2	2		2	2		2	3		3			
	2700	135	0006	74				4		4	4		4	4		4	4		4	4		4			
				76	1		1																		
			0011	74	1		1	4		4	4		4	4		4	4		4	5		5			
	2760	005	0022	75	1		1	1		1	1		1	1		1	1		1	2		2			
	2780	005	0001	74	1		1	1		1	1		1	1		1	1		1	1		1			
			0015	75				3		4	5		5	5		5	5		5	7		7			
				76	1		1																		
			0025	75	1		1	1		1	1		1	1		1	1		1	3		3			
				76				1		1	1		1	1		1	1		1						
			0030	74	1		1	3		3	3		3	3		3	3		3	3		3			
			0036	75	1		1	12		12	11		12	12		12	12		11	13		12			
			0040	76	1		1	1		1	1		1	1		1	1		1	1		1			
			0053	75	1		1	2		2	2		2	2		2	2		2	2		2			
			0066	74	1		1	1		1	1		1	1		1			1	1		1			
	2800	134	0046	75	1		1	14		14	14		13	14		14	14		14	14		14			
	3020	134	0007	74	1		1	2		3	3		2	2		2	2		2	2		2			
			0020	75	1		1	4		4	4		4	4		4	4		4	4		4			
			0022	74	1		1	5		5	5		5	5		6	5		5	7		8			
			0023	74	1		1													1		1			
				76				1		1	1		1	1		1	1		1						
STATE TOTAL					93		93	357		356	356		356	357		356	357		357	617		619			

Figure 7.1.1-b. EPA Regional Office Summary of NEDS Data Received.

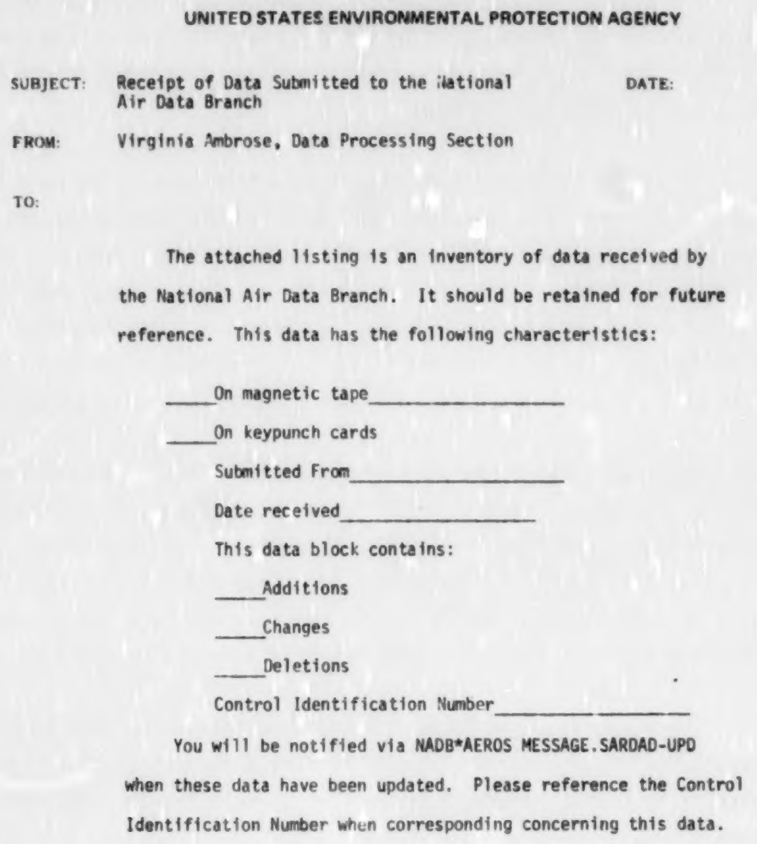
in the input data. Totals for each data type for each state and for the entire set of records in a given data set are also included. These reports can be used to verify that all cards which should be in a data set are in fact present.

Air Quality data submitted to the National Air Data Branch must be on a computer readable medium (i.e., magnetic tape or keypunched cards). These data must be accompanied by a memorandum describing the data and format of the medium.

To ensure the receipt of proper data NADB returns to each submitter through the appropriate Regional Office a memorandum entitled "Receipt of Data Submitted to the National Air Data Branch". This memorandum (Figure 7.1.2-a) verifies the receipt of data, identifies the type of transactions, and assigns a Control Identification Number. This number is used to identify this set of data and should be referenced in any correspondence concerning the status of these data.

Attached to each "Receipt" memorandum and therefore associated with each Control Identification Number is an inventory of these data. This inventory is either a Post-Edit Inventory of SAROAD Data (Figure 7.1.2-b) or a Summary of Data Received (Figure 7.1.2-c). The former will be sent if AEROS Terminal Edit has been used and the latter if the data are sent directly in SAROAD format without prior editing.

These receipts should be examined carefully to ensure that NADB has received all the data thought to have been submitted. It should also be kept as a reference against which data availability can be determined.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

SUBJECT: Receipt of Data Submitted to the National Air Data Branch DATE:

FROM: Virginia Ambrose, Data Processing Section

TO:

The attached listing is an inventory of data received by the National Air Data Branch. It should be retained for future reference. This data has the following characteristics:

_____On magnetic tape___________________

_____On keypunch cards

Submitted From____________________

Date received__________________

This data block contains:

____Additions

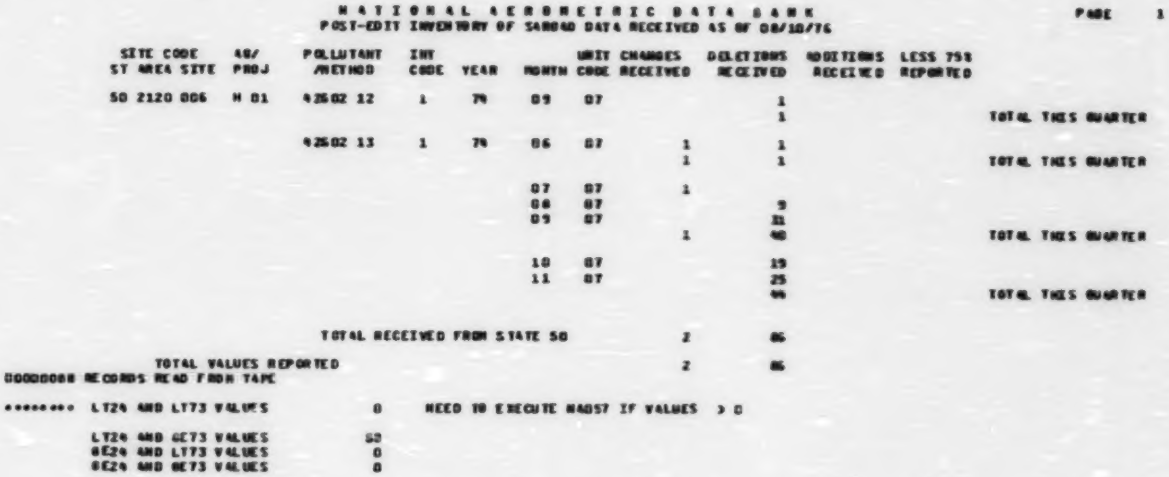
____Changes

____Deletions

Control Identification Number__________ _________

You will be notified via NADB*AEROS MESSAGE.SARDAD-UPD when these data have been updated. Please reference the Control Identification Number when corresponding concerning this data.

Figure 7.1.2-a. Receipt of Data form.



```
                          N A T I O N A L   A E R O M E T R I C   D A T A   B A N K                            PAGE    1
                          POST-EDIT INVENTORY OF SAROAD DATA RECEIVED AS OF 08/10/76

   SITE CODE     AQ/    POLLUTANT   INT                UNIT CHANGES   DELETIONS  ADDITIONS  LESS 75%
 ST AREA SITE   PROJ     /METHOD    CODE  YEAR   MONTH CODE RECEIVED   RECEIVED   RECEIVED  REPORTED

 50 2120 006    H 01    42602 12     1     76     09    07                  1
                                                                            1                        TOTAL THIS QUARTER

                        42602 13     1     76     06    07        1         1
                                                                  1         1                        TOTAL THIS QUARTER

                                                  07    07        1
                                                  08    07                  9
                                                  09    07                 31
                                                                  1        40                        TOTAL THIS QUARTER

                                                  10    07                 19
                                                  11    07                 25
                                                                           44                        TOTAL THIS QUARTER

                          TOTAL RECEIVED FROM STATE 50            2        86

              TOTAL VALUES REPORTED                               2        86
00000088 RECORDS READ FROM TAPE

********  LT24 AND LT73 VALUES          0      NEED TO EXECUTE NADS7 IF VALUES  > 0

          LT24 AND GE73 VALUES         50
          GE24 AND LT73 VALUES          0
          GE24 AND GE73 VALUES          0
```

Figure 7.1.2-b. Post-Edit Inventory.

```
                    NATIONAL   AEROMETRIC   DATA   BANK
          EPA REGIONAL OFFICE SUMMARY OF DATA RECEIVED AS OF 08/10/76

   SITE       AG/   POL-MTH    INT    YEAR   MONTH   UNIT    TALLY
   CODE       PRJ    CODE     CODE

030860001     AC1   1230692    7      74     02      01        2
                                      74     03      01        3
                                      74     04      01        2
                                      74     05      01        2
                                      74     06      01        3
                                      74     07      01        1
                                      74     08      01        3
                                      74     09      01        2
                                      74     10      01        3
                                      74     11      01        2
                                      74     12      01        3
                    1240391    7      73     01      01        3
                                      73     02      01        2
                                      73     03      01        3
                                      73     04      01        2
                                      73     05      01        3
                                      73     06      01        1
                                      73     07      01        3
                                      73     08      01        2
                                      73     09      01        2
                                      73     10      01        2
                                      73     11      01        2
                                      73     12      01        3
                                      74     01      01        2
                                      74     02      01        2
                                      74     03      01        3
                                      74     04      01        2
                                      74     05      01        2
                                      74     06      01        3
                                      74     07      01        1
                                      74     08      01        3
                                      74     09      01        2
                                      74     10      01        3
                                      74     11      01        2
                                      74     12      01        3

                  TOTAL VALUES SUBMITTED FOR STATE 03              834
```

Figure 7.1.2-c. Summary of Data Received.

GENERAL DESCRIPTION

NEDS data submitted to EPA Regional Offices are processed through the NEDS EDITOR program (NE061) to determine if the data meet minimum requirements for updating of NEDS files. Records with data failing to meet the minimum requirements are rejected and the data are not updated to NEDS files.

NE061 was developed to perform edits on all required fields of NEDS Area Source, Point Source, and Unverified Point Source data submitted for update to the NEDS data base. It allows the EPA Regional Offices to identify and correct any data errors which might inhibit updating prior to submitting the data for update.

Input to NE061 is a tape file of card-image NEDS transactions submitted by the States for update to the National Emission Data Bank (NEDB). As each NEDS card image is read, sort keys are appended to it and it is released to an internal COBOL sort. The primary sort sequence is type transaction (e.g. area source, point source or unverified point source). Within each type, the transactions are sorted so that records pertaining to a particular area, point, or unverified point are sequenced continuously.

As each record is returned from the sort, the fields are edited for content and/or format. The contents of two fields (Source Classification Code and County) are validated by accessing other NEDS files. If a record passes all edits, it is written to a tape file of card images which will be input to the NEDS Post-Edit and update processes.

Also for each unique Plant, Point, or SCC identified in the error free data, a standard NEDS selection card image may be generated by NE061. These card images may be used for selection of a Point Source Listing subfile when NEDB update is complete.

Input records which are found to contain edit errors are coded and then written on a temporary mass-storage error file. After all records are edited, the temporary file is closed and reopened as input to the error reporting phase of NE061. In the error reporting phase, each record is read from the temporary file and written on the "Edit Diagnostics" report with a message(s) explaining why the record was rejected. Each time a new state code is encountered while writing the report, NE061 skips to a new page.

NE061 also produces a tape file of NEDS card images which contain edit errors. The file is written in format which allows it, after correction of edit errors, to be used as input to another run of NE061.

NE061 is designed for the use of remote batch terminal users (EPA Regional Offices) of the UNIVAC 1110 located at EPA's Research Triangle Park, N. C., computer center. Approximately 40 seconds of CPU time is required by NE061 to process 1000 NEDS card images.

EDIT DIAGNOSTICS REPORT

NE061 produces the "Edit Diagnostics for NEDS Input" report which shows the following:

1. Input sequences number of each NEDS card-image containing edit errors.
2. The card image enclosed in parentheses.
3. Descriptive error messages describing the edit errors encountered in the card images.
4. An input record count.
5. A count of error records.
6. Counts of Area Source, Point Source, and Unverified Point Source records passing all edits.

Figure 7.2.1-a shows an example of the edit diagnostics report.

NEDS EDITOR ERROR MESSAGES

There are 33 possible error messages which may be generated by NE061 pertaining to area, point, or unverified point source records. Each of the error messages, together with an explanation indicating the only correct values or probable corrective action required when the message is generated, is listed in Table 7.2.1-a.

> ALL NEDS UPDATE TRANSACTIONS MUST BE PROCESSED THROUGH THE NEDS EDITOR PROGRAM AND RESULTING ERRORS CORRECTED BEFORE THE DATA CAN BE SUBMITTED TO NADB FOR UPDATING.

```
                              NATIONAL EMISSIONS DATA SYSTEMS
                       EDIT DIAGNOSTICS FOR MISINPUT DATA AS OF 04/20/76

RECORD NO.                                    CARD IMAGE                                     ERROR MESSAGE
     72  (3100801500005017229510 3            004004501500512000   0   0                     AP2) WARNING-BLANK UTM COORDINATES
                                                                                                  ONE COMMON STACK POINT IS BLANK

    684  (31008015000060172295103              27 14 1500005000    0   0                     AP2) WARNING-BLANK UTM COORDINATES
                                                                                                  ONE COMMON STACK POINT IS BLANK

    692  (310080150001301732951                14 95 2500036000    0   0                     AP2) WARNING-BLANK UTM COORDINATES
                                                                                                  ONE COMMON STACK POINT IS BLANK

    654  (310300043000080174   174   0000000000000000000000000000        0  0  0  0          CP3) CONTROL CODE WITH NO % EFFICIENCY
    666  (310300043000060374        085           000000000000000000000000000000020000   0   AP4) PART.BLANK EMISSION ESTIMATE INVALID
    671  (310300043000060474        247           000000000000000000000000000000020000   0   AP4) PART.BLANK EMISSION ESTIMATE INVALID
    676  (310300043000060574        086           000000000000000000000000000000020000   0   AP4) PART.BLANK EMISSION ESTIMATE INVALID
    732  (31030004300061274301018899       00095     0  0    ONJ-10  NJCT-12427      P1       AP6) NON-NUMERIC IN MAX DESIGN RATE
  1.017  (3103000430039017424 99              30 45  50  25000   0   0                       AP2) WARNING-BLANK UTM COORDINATES
                                                                                                  ONE COMMON STACK POINT IS BLANK

  1.027  (31030004300390274 3079              15 17  50   2400   0   0                       AP2) WARNING-BLANK UTM COORDINATES
                                                                                                  ONE COMMON STACK POINT IS BLANK

  1.022  (3103000430039027424 99              10 45  50  25000   0   0                       AP2) WARNING-BLANK UTM COORDINATES
                                                                                                  ONE COMMON STACK POINT IS BLANK

  1.032  (3103000430039047424 99              14 23  50   9600   0   0                       AP2) WARNING-BLANK UTM COORDINATES
                                                                                                  ONE COMMON STACK POINT IS BLANK

  1.037  (310300043000390574                  25 25  70  10000   0   0                       AP2) WARNING-BLANK UTM COORDINATES
                                                                                                  ONE COMMON STACK POINT IS BLANK

  1.040  (31030004300 3905  000003000000000000000099999900000001    7501290    7             AP5)       YEAR OF RECORD NOT NUMERIC
  1.042  (310300043000390674                  40 52 570  57700   0   0                       AP2) WARNING-BLANK UTM COORDINATES
```

Figure 7.2.1-a. NEDS Edit Diagnostics Report.

Table 7.2.1-a. NEDS EDIT ERROR MESSAGES

1. ___IS AN INVALID STATE ID
Explanation: Valid State ID's are 01-55.

2. ___IS AN INVALID COUNTY ID
Explanation: The county shown is not a valid entry in the AERO-CTYCNTY File.

3. ___IS AN INVALID AQCR
Explanation: Valid AQCR's are 000-247

4. ___YEAR OF RECORD>CURRENT
Explanation: The year of record must be equal or less than the current year.

5. YEAR OF RECORD NOT NUMERIC
Explanation: Self explanatory.

6. ___PLANT ID CONTAINS BLANKS
Explanation: Plant ID may not contain blanks.

7. WARNING UTM-ZONE NUMBER IS BLANK
Explanation: The UTM zone number should always be entered but blanks in this field will not cause the record to be rejected.

8. ESTABLISHMENT NAME/ADDR. MISSING
Explanation: The establishment name and address must be entered.

9. ___IS AN INVALID OWNERSHIP CODE
Explanation: Valid ownership codes are as follows:

P - Private
L - Local Government
S - State Government
F - Federal Government
U - Utility (Electric Power Plants, etc.)

10. ___POINT CANNOT CONTAIN BLANKS
Explanation: Point ID may not contain blanks.

11. ___POINT NOT IN RANGE___-___
Explanation: Entries in cols. 56-59 indicate this point shares a common discharge stack but the point ID is not within range specified in cols, 56-59.

Table 7.2.1-a (cont.). NEDS EDIT ERROR MESSAGES

12. ___ESTIMATION METHOD INVALID
Explanation: The valid estimation method codes are 0-7 and blank. However, blanks are allowed only if the corresponding estimate is also blank.

13. WARNING-BLANK UTM COORDINATES
Explanation: The UTM coordinates should always be entered but blanks will not cause the record to be rejected.

14. ERROR IN SCC
Explanation: The SCC must be completely filled in and be a valid entry in the NEDS-EM-FACT file. Valid SCC codes are in the Source Classification Code Table in Publication No. AP-42, latest edition.

15. ___IS AN INVALID CONFIDENTIALITY CODE
Explanation: All confidentiality codes except 1, 2, and 3 are changed to 1 (message 20). Code 3 is invalid and appears in this message.

16. COMMENTS MAY NOT BE BLANK
Explanation: If the SCC ends in 97, 98, or 99 (general), a description of the process must be reported in the comments field.

17. ___IN COLUMN 78
Explanation: The only allowable entries in this column are: A-(Add), C-(Change), and D-(Delete).

18. ___IN COLUMN 79 NO OTHER EDITS MADE
Explanation: The only allowable entries in this column are: A-(Area Source), P-(Point Source), and V-(Unverified Point Source).

19. ___IN COLUMN 80
Explanation: The only allowable entries in this column are 1-7.

20. WARNING-CONFID. CHANGED TO 1
Explanation: If the confidentiality code is less than 1 or greater than 3 it is changed to 1. The record is not rejected for this error.

21. ___IS AN INVALID CONTROL CODE
Explanation: The Control Equipment Code shown is not in the control code table. Valid entries are in Vol. V, Section 3.3.0 of the AEROS Manual.

Table 7.2.1-a (cont.). NEDS EDIT ERROR MESSAGES

22. CONTROL CODE/%EFFICIENCY INVALID
Explanation: If a control code is shown for a pollutant, the corresponding estimated percent efficiency must also be entered. Also if a percent efficiency is shown a control code must also be entered.

*23. NON-NUMERIC IN ____________
Explanation: If an entry is made in the field shown, the entry must be all numeric.

24. ONE COMMON STACK POINT IS BLANK
Explanation: If an entry is made in cols. 56-59 (points with common stack), both the low point number (56-57) and the high point number (58-59) must be entered.

25. COMMON STACK POINT 2 NOT>POINT 1
Explanation: Cols. 56-57 and 58-59 represent a range of point numbers sharing a common discharge stack. Cols. 58-59 must be the larger point number.

26. ___EMISSION EST.>800,000 TONS
Explanation: The pollutant shown has estimated emission greater than the allowed maximum (800,000 tons).

27. ___BLANK EMISSION ESTIMATE INVALID
Explanation: If the estimation method for a pollutant is 1, 2, 4 or 5 an estimated emission must be shown for that pollutant.

28. INVALID ACTION/CARD COMBINATION
Explanation: For Area Source records, a "D" action is valid only for card number 1.

For Point Source and Unverified Point Source records, a "D" action is valid only for card number 1, 2, and 6.

29. SOURCE CODE>64-COMMENTS BLANK

Explanation: If the source code in an area source card number 7 is greater than 64, the comments field may not be blank.

Table 7.2.1-a (cont.). NEDS EDIT ERROR MESSAGES

30. ___MAX EXCEEDED IN SULFUR CONT. %

Explanation: The allowed maximum values are:
Anthracite Coal-2
Bituminous Coal-7
Distillate Oil -1
Residual Oil -5

31. ___MAX EXCEEDED IN ASH CONTENT %

Explanation: The allowed maximum values are:
Anthracite Coal-25
Biruminous Coal-25

32. ___PLANT ID MUST BEGIN WITH 9

Explanation: All unverified Point Source plant numbers must begin with a 9.

33. V TYPE RECORD-SCC MUST BE NUMERIC

Explanation: The SCC in Unverified Point Source is not checked against the NEDS-EM-FACT file but must be all numeric.

* A total of 135 fields in the Area Source, Point Source, and Unverified Point Source cards may appear in error message number 23. The field names are abbreviated in the message due to limited print line space. Table 7.2.1-b is a cross-reference showing the abbreviated field name, the number of the card containing the field, and the field name.

Table 7.2.1-b. FIELDS REQUIRING ALL NUMERICS (or all blanks)

Items 1-58 apply to point source and unverified point source records

	Error Message Abbreviation	Card	Field Name
1.	SIC CODE	2	Standard Industrial Classification Code
2.	IPP PROCESS CODE	2	IPP Process Code
3.	Stack Height	2	Stack Height (Ft.)
4.	Stack Diameter	2	Stack Diameter (Ft.)
5.	Stack Temp.	2	Stack Temperature (Degrees F.)
6.	Flow Rate	2	Stack Flow Rate (Cubic Ft./minute)
7.	Plume height	2	Plume Height (Ft.)-if no stack
8.	Boiler Des. Cap.	3	Boiler Design Capacity (1,000,000 BTU/hr)
9.	Pri. Part. Control	3	Control Equipment Code-Primary Particulate
10.	Sec. Part. Control	3	Control Equipment Code-Secondary Particulate
11.	Pri. SO2 Control	3	Control Equipment Code-Primary SO2
12.	Sec. SO2 Control	3	Control Equipment Code-Secondary SO2
13.	Pri. NOX Control	3	Control Equipment Code-Primary NOx
14.	Sec. NOX Control	3	Control Equipment Code-Secondary NOx
15.	Pri. HC Control	3	Control Equipment Code-Primary HC
16.	Sec. HC Control	3	Control Equipment Code-Secondary HC
17.	Pri. CO Control	3	Control Equipment Code-Primary CO
18.	Sec. CO Control	3	Control Equipment Code-Secondary CO
19.	Part. Control Eff.	3	Estimated Control Efficiency %-Particulate
20.	SO2 Control Eff.	3	Estimated Control Efficiency %-SO2
21.	NOX Control Eff.	3	Estimated Control Efficiency %-NOx
22.	HC Control Eff.	3	Estimated Control Efficiency %-HC
23.	CO Control Eff.	3	Estimated Control Efficiency %-CO
24.	DEC-FEB T.P. PCT.	4	% Annual Throughput, December-February
25.	MAR-MAY T.P. PCT.	4	% Annual Throughput, March-May
26.	JUN-AUG T.P. PCT.	4	% Annual Throughput, June-August
27.	SEP-NOV T.P. PCT.	4	% Annual Throughput, September-November
28.	Normal Op. Hr/Day	4	Normal operating hours per day
29.	Normal Op. Day/Wk	4	Normal operating days per week
30.	Normal Op. Wk/Yr	4	Normal operating weeks per year
31.	Emis. Est. Part.	4	Estimated tons of particulate emissions for a year
32.	Emis. Est. SO2	4	Estimated tons of SO2 emissions for a year
33.	Emis. Est. NOX	4	Estimated tons of NOx emissions for a year
34.	Emis. Est. HC	4	Estimated tons of HC emissions for a year
35.	Emis. Est. CO	4	Estimated tons of CO emissions for a year
36.	Est. Meth. Part.	4	Estimation Method Code used for particulate
37.	Est. Meth. SO2	4	Estimation Method Code used for SO2
38.	Est. Meth. NOX	4	Estimation Method Code used for NOx
39.	Est. Meth. HC	4	Estimation Method Code used for HC
40.	Est. Meth. CO	4	Estimation Method Code used for CO
41.	PCT. SPACE HEAT	4	Percentage of Space Heated

Table 7.2.1-b (cont.). FIELDS REQUIRING ALL NUMBERICS

	Error Message Abbreviation	Card	Field Name
42.	Emis. ALLOW PART.	5	Allowable Emission tons per year of particulate
43.	Emis. ALLOW SO2	5	Allowable Emission tons per year of SO2
44.	Emis. ALLOW NOX	5	Allowable Emission tons per year of NOx
45.	Emis. ALLOW HC	5	Allowable Emission tons per year of HC
46.	Emis. ALLOW CO	5	Allowable Emission tons per year of CO
47.	Compliance Status	5	Compliance Status Code
48.	Comp. Sched. Year	5	Compliance Schedule Year
49.	Comp. Sched. Mo.	5	Compliance Schedule Mo.
50.	Comp. Stat. Up. YR	5	Compliance Status Update Year
51.	Comp. Stat. Up. MO	5	Compliance Status Update Month
52.	Comp. Stat. Up. DA	5	Compliance Status Update Day
53.	ECAP	5	Emergency Control Action Program Status Code
54.	Operating Rate	6	Annual Fuel, Process, Solid Waste Operating Rate
55.	Max Design Rate	6	Hourly Maximum Design Rate
56.	Percent Sulfur	6	Fuel Percent Sulfur Content
57.	Percent Ash	6	Fuel Percent Ash Content
58.	Heat Content	6	Fuel Heat Content (1,000,000 BTU/SCC)

The remainder of this list is the fields found on area source cards.

	Error Message Abbreviation	Card	Field Name
59.	SIP EST. PART	1	SIP Emission Estimate (10^2 tons/yr)-Particulate
60.	SIP EST. SO2	1	SIP Emission Estimate (10^2 tons/yr)-SO_2
61.	SIP EST. NOX	1	SIP Emission Estimate (10^2 tons/yr)-NO_x
62.	SIP EST. HC	1	SIP Emission Estimate (10^2 tons/yr)-HC
63.	SIP EST. CO	1	SIP Emission Estimate (10^2 tons/yr)-CO
64.	Anth. Sulfur Pct.	1	Sulfur Content Percent-Anthracite Coal
65.	Bitum. Sulfur Pct.	1	Sulfur Content Percent-Bituminous Coal
66.	D. OIL Sulfur Pct.	1	Sulfur Content Percent-Distillate Oil
67.	R. OIL Sulfur Pct.	1	Sulfur Content Percent-Residule Oil
68.	Anth. Ash Pct.	1	Ash Content Percent-Anthracite Coal
69.	Bitum Ash Pct.	1	Ash Content Percent-Bituminous Coal
70.	R. FUEL-Anthracite	1	Residential Fuel-Anthracite Coal (10^1 tons)
71.	R. FUEL-Bituminous	1	Residential Fuel-Bituminous Coal (10^1 tons)
72.	P. FUEL-D. OIL	1	Residential Fuel-Distillate Oil (10^4 gal.)
73.	R. FUEL-R. OIL	1	Residential Fuel-Residule Oil (10^4 gal.)
74.	R. FUEL-NAT. GAS	1	Residential Fuel-Natural Gas (10^7 Ft^3)
75.	R. FUEL-Wood	1	Residential Fuel-Wood (10^2 tons)
76.	CI FUEL-Anthracite	2	Commercial and Institutional Fuel-Anthracite Coal (10^1 tons)
77.	CI FUEL-Bituminous	2	Commercial and Institutional Fuel-Bituminous Coal (10^1 tons)
78.	CI FUEL-D. Oil	2	Commercial and Institutional Fuel-Distillate Oil (10^4 gal.)
79.	CI FUEL-R. Oil	2	Commercial and Institutional Fuel-Residule Oil (10^4 gal.)

Table 7.2.1-b (cont.) FIELDS REQUIRING ALL NUMERICS

	Error Message Abbreviation	Card	Field Name
80.	CI FUEL-Nat. Gas	2	Commercial and Institutional Fuel-Natural Gas (10^7 Ft^3)
81.	CI FUEL-Wood	2	Commercial and Institutional Fuel-Wood (10^2 tons)
82.	I. FUEL-Anthracite	2	Industrial Fuel-Anthracite Coal (10^1 tons)
83.	I. FUEL-Bituminous	2	Industrial Fuel-Bituminous Coal (10^1 tons)
84.	I. FUEL-Coke	2	Industrial Fuel-Coke (10^1 tons)
85.	I. FUEL-D. Oil	2	Industrial Fuel-Distillate Oil (10^4 gal.)
86.	I. FUEL-R. Oil	2	Industrial Fuel-Residule Oil (10^4 gal.)
87.	I. FUEL-Nat. Gas	2	Industrial Fuel-Natural Gas (10^7 Ft^3)
88.	I. FUEL-WOOD	2	Industrial Fuel-Wood (10^2 tons)
89.	I. FUEL-Pro. Gas	2	Industrial Fuel-Processed Gas (10^7 Ft 3)
90.	OSI-RESIDENTIAL	3	On Site Burning-Residential (10^1 tons)
91.	OSI-Industrial	3	On Site Burning-Industrial (10^2 tons)
92.	OSI-COMM/INST	3	On Site Burning-Commercial and Institutional (10^2 tons)
93.	OB-Residential	3	Open Burning-Residential (10^2 tons)
94.	OB-Industrial	3	Open Burning-Industrial (10^2 tons)
95.	OB-COMM/INST	3	Open Burning-Commercial and Institutional (10^2 tons)
96.	Gasoline-LVH	3	Gasoline-Light Vehicles (10^3 gals.)
97.	Gasoline-HVH	3	Gasoline-Heavy Vehicles (10^3 gals.)
98.	Gasoline-OFF H.W.	3	Gasoline-Off Highway (10^3 gals.)
99.	DIESEL-HVH	3	Diesel-Heavy Vehicles (10^3 gals.)
100.	DIESEL-OFF H.W.	3	DIESEL-Off Highway (10^4 gals.)
101.	DIESEL-Rail	3	DIESEL-Rail Locomotive (10^4 gals.)
102.	Population Code	3	Population Code
103.	Aircraft-Mil.	4	Aircraft-Military (LTO Cycles 10^2)
104.	Aircraft-Civil.	4	Aircraft-Civil (LTO Cycles 10^1)
105.	Aircraft-Comm.	4	Aircraft-Commercial (LTO Cycles 10^1)
106.	Vessels-Coal	4	Vessels-Coal (10^1 tons)
107.	Vessels-Diesel	4	Vessels-Diesel Oil (10^4 gal.)
108.	Vessels-R. Oil	4	Vessels-Residule Oil (10^4 gal.)
109.	Vessels-Gas	4	Vessels-Gasoline (10^3 gal.)
110.	Evaporate-Solv	4	Evaporation-Solvent Purchases (tons/year)
111.	Evaporate-Gas	4	Evapoaration-Gasoline Marketed (10^5 gal.)
112.	MVM-L. ACC.	4	Measured Vehicle Miles-Limited Access Roads (10^4 miles)
113.	MVM-Rural	4	Measured Vehicle Miles-Rural Roads (10^4 miles)
114.	MVM-Suburb	4	Measured Vehicle Miles-Suburban Roads (10^4 miles)
115.	MVM-Urban	4	Measured Vehicle Miles-Urban Roads (10^4 miles)
116.	Dirt Roads Travel	5	Dirt Roads Traveled (10^3 Vehicle Miles)
117.	Dirt Air Strips	5	Dirt Air Strips (LTO Cycles)
118.	Construction Acres	5	Construction Acres (10^3 Acres)
119.	Misc. Wind Erosion	5	Miscellaneous Wind Erosion (10^3 Acres)

Table 7.2.1-b (cont.). FIELDS REQUIRING ALL NUMERICS

	Error Message Abbreviation	Card	Field Name
120.	Land Tilling	5	Land Tilling (10^3 Acres)
121.	Forest Fire Acres	5	Forest Wild Fires-Acres burned
122.	Forest Fire Tons	5	Forest Wild Fires-Tons/Acres burned
123.	Manage Burn Acres	5	Managed Burning (Prescribed)-Acres burned
124.	Manage Burn Tons	5	Managed Burning (Prescribed)-Tons/Acres burned
125.	Agri. Burn Acres	5	Agricultural Field Burning-Acres burned
126.	Agri. Burn Tons	5	Agricultural Field Burning-Tons/Acres burned
127.	Frost. Cont. Orch.	5	Frost Control-Orchard Heaters Operating (10^2)
128.	Frost. Cont. Days	5	Frost Control-Days/Fired, Days/Year
129.	Structure Fires	5	Structure Fires Fires per year
130.	Source Code	7	Source Code
131.	Source Em. Est.-P	7	Source Emission Estimate (tons/yr)-Particulate
132.	Source Em. Est.-S	7	Source Emission Estimate (tons/yr)-SO_2
133.	Source Em. Est.-N	7	Source Emission Estimate (tons/yr)-NO_x
134.	Source Em. Est.-H	7	Source Emission Estimate (tons/yr)-HC
135.	Source Em. Est.-C	7	Source Emission Estimate (tons/yr)-CO

Table 7.2.1-c indicates the card types action codes, and card numbers which may be associated with each of the error messages listed in Table 7.2.1-a.

Table 7.2.1-c. CARD TYPES ASSOCIATED WITH ERROR MESSAGES

Error number (Table 7.2.1-a)	Card type	Action code	Card number
1	A, P, V	A, C*	1, 2, 3, 4, 5, 6, 7
2	A, P, V	A, C*	1, 2, 3, 4, 5, 6, 7
3	A, P, V	A, C*	1, 2, 3, 4, 5, 6, 7
4	A	A, C*	1, 7
	P, V	A, C*	1, 2, 3, 4, 5, 6, 7
5	A	A, C*	1, 7
	P, V	A, C*	1, 2, 3, 4, 5, 6, 7
6	P, V	A, C*	1, 2, 3, 4, 5, 6, 7
7	P	A	1
8	P, V	A	1
9	P, V	A, C	1
10	P, V	A, C*	2, 3, 4, 5, 6, 7
11	P	A, C	2
12	P	A, C	4
13	P	A	2
14	P	A, C	6, 7
15	P	A, C	6
16	P	A	6
17	A, P, V	A, C*, D	1, 2, 3, 4, 5, 6, 7
18	A, P, V	A, C*, D	1, 2, 3, 4, 5, 6, 7
19	A, P, V	A, C*, D	1, 2, 3, 4, 5, 6, 7
20	P	A, C	6
21	P	A, C	3
22	P	A, C	3
23,	A, P	A, C	1,2,3,4,5,6,7
24	P	A, C	2
25	P	A, C	2
26	P	A	4
27	P	A, C	4
28	A	D	2, 3, 4, 5, 6, 7
	P, V	D	3, 4, 5, 7
29	A	A	7
30	A	A, C	1
31	A	A, C	1
32	V	A, C	1, 2, 3, 4, 5, 6, 7
33	V	A, C	6, 7

*Normally the error message for a 'C' action code is only produced when the Field in error is non-blank. The error messages for the ones with * are produced even if the field is blank.

Incoming air quality data are run through an edit program and the raw data files are updated. Two types of computer rejection listings are printed as a result of these actions. The rejections listings are forwarded to the appropriate Regional Office for correction of data.

Figure 7.2.2-a shows the format for rejections from the EDIT program. The output essentially contains three sections across the page:

SECTION 1: REC#______

This number is used for internal purposes only.

SECTION 2: Listing of card containing error. This section falls between the parentheses and shows the actual card input. The format of this record is determined by the first digit which shows the form number referred to in Section 2.4.0. The positions in the listing conform with the card columns shown for the SAROAD forms in the above section.

SECTION 3: This section indicates the codes of the relevant items which are incorrect. Figure 7.2.2-b contains additional diagnostic messages.

```
 DATE OF EDIT 08-10-76
----------------------------------------------------------------------------------------------------
REC #     67     (1502120006H01174110312130739999                             )    POL=13073 METH=99 UNIT=99 INT=1
----------------------------------------------------------------------------------------------------
REC #     68     (1502120006H01174110512130739999                             )    POL=13073 METH=99 UNIT=99 INT=1
----------------------------------------------------------------------------------------------------
REC #     71     (15021200006H0117411071213073             9999               )    POL=13073 METH=   UNIT=   INT=1
                                                                                   NUMERIC CHARACTER ERROR =
                                                                                   NUMERIC CHARACTER ERROR =
                                                                                   NUMERIC CHARACTER ERROR =
                                                                                   NUMERIC CHARACTER ERROR =
```

Figure 7.2.2-a. Air Quality Data Editor Listing.

1. - Is an invalid record type
   Explanation: This card type is not allowed. Only card types 1 throught — 9 are permitted.

2. POL = _____ MEHT = _____ UNIT = _____ INT = _____
   Explanation: This pollutant-method-unit-interval combination is not allowed because it does not exist on the PARM-FILE.

3. START HOUR = _____ ON CARD = _____
   Explanation: This start hour is not allowed on the card type noted.

4. TIME INT = _____ ON CARD = _____
   Explanation: This time interval is not allowed on this card type.

5. CLASS = _____
   Explanation: Classification coded on card is not allowable.

6. YR = _____ MO = _____ DA = _____
   Explanation: This year-month-day combination is not allowable.

7. VALUE = _____
   Explanation: This rejected value has some non-numeric character. Values must be numeric and right justified.

8. START HOUR = _____ FOR TIME INT = _____
   Explantation: This start hour-interval code combination is not allowed.

Figure 7.2.2-b. Editor error messages (as of 4/22/76).

9. (a) ALPHABETIC CHARACTER ERROR = ____

Explanation: A numeric appears in an alphabetic field or a not allowed alphabetic character.

(b) NUMERIC CHARACTER ERROR = ____

Explanation: A non-numeric character appeared in a numeric only field.

10. NO SITE = ____

Explanation: This site is not currently on the site file.

11. VAL = (____)*10**-DP)*CNV>16,327:

____

____

Explanation: This value, adjusted for the decimal point, times its conversion factor is greater than 16,327, the maximum five digit number allowed on the NADB.

12. REC HELD ____ DATE ____

Explanation: This record was sent to the HOLDFILE because its date fell between the hold dates noted.

13. POLLMETH ____ REQ'D FOR POS. ____

Explanation: On this form, only the pollutant-method noted may be coded in the parameter position noted. The group control card determines the poll-meth.

14. MORE INFOR NEEEDED FOR PARM-POS. ____

Figure 7.2.2-b (continued). Edit error messages (as of 4/22/76).

Explanation: More information must be supplied on the control card for this group if user wished to code in the parameter position noted.

15. VAL = (_____)*10**-DP)*CNV>MAX

Explanation: This value, adjusted for the decimal point, times its conversion factor is greater than allowed maximums shown below.

POLLUTANT	CODE	MAXIMUM	
TSP	11101	2000 ug/m^3	
CO	42101	115 mg/m^3	(100 ppm)
SO_2	42401	5240 ug/m^3	(2 ppm)
NO	42601	3690 ug/m^3	(3 ppm)
NO_2	42602	3760 ug/m^3	(2 ppm)
NO_x	42603	9400 ug/m^3	(5 ppm)
THC	43101	6540 ug/m^3	(10 ppm)
NON-METH-HC	43102	3270 ug/m^3	(5 ppm)
O_x	44101	1372 ug/m^3	(0.7 ppm)
O_x	44103	1372 ug/m^3	(0.7 ppm)
O_x	44201	1372 ug/m^3	(0.7 ppm)
WIND DIRECTION	61102	360°	

16. COMPOSITE TYPE SPECIFIED=ZERO
Explanation: On a card-type 2-C, the composite type was coded with an invalid zero.

Figure 7.2.2-b (continued). Edit error messages (as of 4/22/76).

17. SAMPLE TIME SPECIFIED AS ZERO
Explanation: On a card-type 2-C, the sample period was coded with an invalid zero.

18. CARD PROCESSED AS DELETE
Explanation: Printed when a site file check found no site on a deletion card group.

19. WRONG ACTION = ______ FOR CODE = ______ JOB ENDS.
Explanation: To a group of ADDITIONS cards, control card should show Action =1 for a group of CHANGES, control card should show Action =2 for a group of DELETIONS, control card should show Action =3.

20. NO MORE PROCESSING.
Explanation: This card had some error that prohibited further processing in the normal manner.

21. ERROR WHEN DP = ______
Explanation: A non-allowable decimal point indicator. Zero to 5 are valid.

22. MASTER CONTROL CARD MISSING - EDITOR TERMINATED
Self explanatory - processing aborted

23. GROUP OPTION ON-FIRST RECORD NOT GROUP HEADER-EDITOR TERMINATED

Figure 7.2.2-b (continued). Edit error messages (as of 4/22/76).

Explanation: If the group option is used, Group Headers must be included in the input data.

24. NO LEGITIMATE VALUE
Explanation: This card passed all edit checks but contained no legitimate data values (i.e. all values were 9999 or blanks)

25. NO TIME CHECK
Explanation: When composite time or sample time on a card type 2-C is equal to zero, no check of the basic of time/date can be performed.

26. NECESSARY GROUP CONTROL CARD NOT FOUND. JOB ENDS.
Explanation: The editor program attempted to read a group control card necessary to continue processing at this point and none was found.

27. UNIT CODE OPTION 3 NO LONGER AVAILABLE TO USERS. RUN STOPS.
Explanation: This option is no longer available in NA027.

Figure 7.2.2-b (continued). Edit error messages (as of 4/22/76).

RECEIPT OF DATA

Receipt of emission data by the National Air Data Branch involves three separate processes: log-in, data processing through post-edit, and acknowledgement.

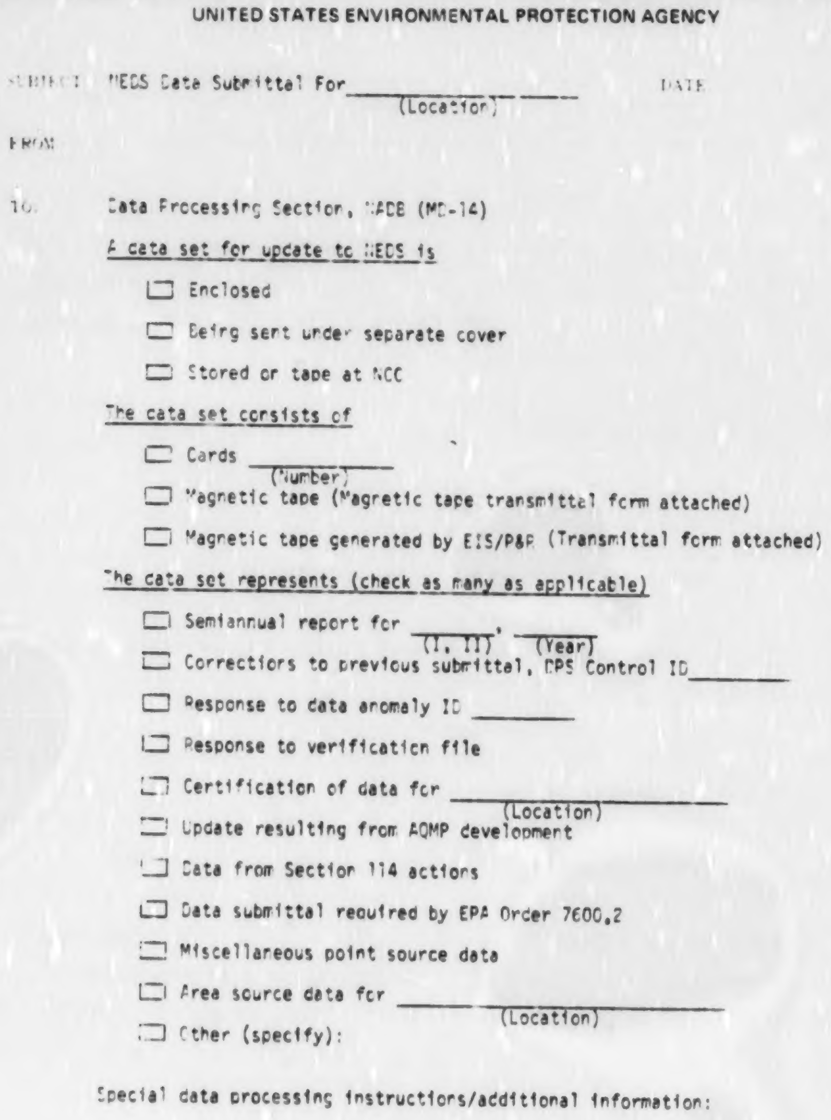
Log-in

All emissions data received by the NADB from Regional Offices or any special studies will be logged in before processing begins. Before the data can be logged in and processing begun, a cover letter must be received with the following minimum information given:

1. Name of agency submitting data.
2. Date of submission.
3. Approximate number of cards or records included.
4. Type of data (whether seminannual report data or supplemental data) and the period covered.
5. If a magnetic tape contains the data, a magnetic tape file transmittal form must be included for each file.

Figure 7.3.1-a shows an example NEDS data transmittal form.

As the data are logged in, a control ID, which will be used for all future references, is assigned. This control ID is assigned by using NED as first three characters, the state or region abbreviation as the



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

SUBJECT: NEDS Data Submittal For ________________ (Location)   DATE

FROM:

TO: Data Processing Section, NADB (MD-14)

A data set for update to NEDS is

☐ Enclosed

☐ Being sent under separate cover

☐ Stored on tape at NCC

The data set consists of

☐ Cards ________ (Number)

☐ Magnetic tape (Magnetic tape transmittal form attached)

☐ Magnetic tape generated by EIS/P&R (Transmittal form attached)

The data set represents (check as many as applicable)

☐ Semiannual report for ______ (I, II), ______ (Year)

☐ Corrections to previous submittal, DPS Control ID ________

☐ Response to data anomaly ID ________

☐ Response to verification file

☐ Certification of data for ________________ (Location)

☐ Update resulting from AQMP development

☐ Data from Section 114 actions

☐ Data submittal required by EPA Order 7600.2

☐ Miscellaneous point source data

☐ Area source data for ________________ (Location)

☐ Other (specify):

Special data processing instructions/additional information:

Figure 7.3.1-a. NEDS Data Submittal Form.

next two characters, and the Julian date as the next three characters. If several data sets or tape files are received on a given day, the files are uniquely identified by letters of the alphabet.

Data Processing Through Post-Edit

The computer processing begins after the Control ID has been assigned. The Inventory of Data received is run on all data. The procedures used to execute this program vary, depending on whether the data are on cards or tapes.

If the data are on tape, they are converted to a standard format tape and the Inventory of Data is run from the new tape. If we are unable to process the tape after two attempts, the appropriate Regional Office AEROS contact is contacted to confirm the tape characteristics. If the tape characteristics were correct, the tape is returned without additional processing. If the information was incorrect, two attempts are made with the new characteristics. If these fail, the tape is returned.

If the data are received on cards, the Inventory of Data is run on the cards for data sets of less than 2000 cards. If more than 2000 cards, the cards are stored on tape, and the Inventory of Data is executed using the tape.

Acknowledgement

NADB will acknowledge each data submission received by completing and forwarding to the appropriate Regional Office a "Receipt of Data Submitted to the National Air Data Branch." Each "Receipt of Data" form will be accompanied by an "Inventory of Data Received," which is a computer listing of the data received in the subject submission. The Regional Office, in turn, notifies the data originator of the disposition of this data as set forth in Section 6.2.1 of this volume.

RECEIPT OF DATA FORM

The "Receipt of Data Submitted to the National Air Data Branch" (Figure 7.3.1-b) is completed as follows. The numbered explanations refer to the numbered areas on the sample form attached.

1. If this is a magnetic tape submission, enter an "X."
2. Enter the reel number or other unique identifying number of the magnetic tape submitted.
3. If this is a punched card submission, enter an "X."
4. Enter the name or office symbol of the organization that is submitting the data and the date of the transmittal memo.
5. Enter the date NADB received these data.
6. Enter an "X" to indicate the appropriate action codes submitted in the data.
7. Enter the NADB Control Identification Number assigned to this submission.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

SUBJECT: Receipt of Data Submitted to the National Air Data Branch **DATE:**

FROM: Virginia Ambrose, Data Processing Section

TO:

The attached listing is an inventory of data received by the National Air Data Branch. It should be retained for future reference. This data have the following characteristics:

1 ____ On magnetic tape ________________ 2
3 ____ On keypunch cards
4 Submitted from ________________
5 Date received ________________
6 This data block contains:
____ Additions
____ Changes
____ Deletions
7 Control Identification Number ______

You will be notified via NADB*AERO-MESSAGE. NEDS-UPD when these data have been updated. Please reference the Control Identification Number when corresponding concerning these data.

Figure 7.3.1-b. Receipt of Data Submitted to NADB.

POST-EDIT REPORT

The post-edit inventory program (NE062) is a stand-alone computer run which uses Edit/Sorted NEDS transactions from the EPA Regional Offices to produce inventory reports and tape files of area source, point source, and unverified point source NEDS update transactions.

Input to NE062 is a card-image tape file, blocked 50 records per block, submitted to NADB Data Processing Section by the EPA Regional Offices.

As each record is read by NE062, a special code is checked to verify that the record has been processed by NE061 (NEDS Editor). If this test fails, the run is aborted. Otherwise the input record is then written on an applicable output tape file (area source file, point source file, or unverified point source file). Each area source record is also written on a temporary mass-storage file which is used to produce a listing of all area source records after the other reports are completed.

From one to three reports are produced by NE062 depending upon the data on the input tape file. "Summary of Edited NEDS Data" reports may be printed for: (1) Area Source data; (2) Point Source data; and (3) Unverified Point Source data depending upon the input data. All reports are in the same format. The format is basically identical to the pre-edit inventory of data received (Figure 7.1.1-b).

After air quality data have been edited, sorted, and merged, the update transactions are updated to the raw data files. This update program creates the new raw data file and a tape containing the rejected data. A separate program is utilized to list the rejection messages by state. The update rejections are returned to the appropriate Regional Office for correction of the data.

Figure 7.3.2-a shows the format for rejections from the update program. The output contains six columns across the page and the contents of each column is given below:

Column 1: Transaction Code
1 - Change Value   3 - Delete value
2 - Add Value   4 - Delete record

Column 2: SAROAD Key

Character	Item
1 - 2	State
3 - 6	Area
7 - 9	Site
10 - 12	Agency Project
13 - 17	Pollutant
18 - 19	Method
20	Interval
21 - 22	Year
23 - 24	Month
25 - 26	00 for daily value; day for hourly value
27 - 28	day for daily value; hour for hourly value
29 - 30	00
31 - 32	Units code

Column 3: New Value which was rejected.

Column 4: Old Value - This column only completed when rejection message is 'Add to Existing Value giving both values to see if data have been processed twice.

Column 5: Decimal Point Indicator

Column 6: Reason For Rejection gives the reason that the data were rejected. Additional error messages are given in Figure 7.3.2-b.

```
PAGE    1                          R E J E C T I O N   L I S T I N G                    JULY 23, 1976

                                                   DELAWARE
TRANSACTION         SAROAD  KEY                  NEW  VALUE       OLD  VALUE      DECIMAL PT.          REASON FOR REJECTION
    CODE                                                                           INDICATOR
------------------------------------------------------------------------------------------------------------------------------

     2          000140002F0142401111750600120007      .00199          .00099           3           ADD  TO  EXISTING  VALUE
     2          000140002F0142401111750600130007      .00099          .00000           3           ADD  TO  EXISTING  VALUE
     2          000140002F0142401111750600140007      .00000          .00099           3           ADD  TO  EXISTING  VALUE
     2          000140002F0142401111750600150007      .00099          .00000           3           ADD  TO  EXISTING  VALUE
     2          000140002F0142401111750600160007      .00099          .00000           3           ADD  TO  EXISTING  VALUE
     2          000140002F0142401111750600170007      .00000          .00099           3           ADD  TO  EXISTING  VALUE
     2          000140002F0142401111750600180007      .00099          .00000           3           ADD  TO  EXISTING  VALUE
     2          000140002F0142401111750600190007      .00000          .00099           3           ADD  TO  EXISTING  VALUE
     2          000140002F0142401111750600200007      .00099          .00000           3           ADD  TO  EXISTING  VALUE
     2          000140002F0142401111750600210007      .00000          .00099           3           ADD  TO  EXISTING  VALUE
     2          000140002F0142401111750600220007      .00099          .00000           3           ADD  TO  EXISTING  VALUE
     2          000140002F0142401111750600230007      .00099          .00000           3           ADD  TO  EXISTING  VALUE
     2          000180001F0111201811751213000009      .19999          .19999           2           ADD  TO  EXISTING  VALUE
     2          000180001F0111201811751213010009      .49999          .49999           2           ADD  TO  EXISTING  VALUE
     2          000180001F0111201811751213020009      .29999          .29999           2           ADD  TO  EXISTING  VALUE
     2          000180001F0111201811751213030009      .69999          .69999           2           ADD  TO  EXISTING  VALUE
     2          000180001F0111201811751213040009      .69999          .69999           2           ADD  TO  EXISTING  VALUE
     2          000180001F0111201811751213050009      .69999          .69999           2           ADD  TO  EXISTING  VALUE
     2          000180001F0111201811751213060009      .69999          .69999           2           ADD  TO  EXISTING  VALUE
     2          000180001F0111201811751213070009      .69999          .69999           2           ADD  TO  EXISTING  VALUE
     2          000180001F0111201811751213080009      .69999          .79999           2           ADD  TO  EXISTING  VALUE
     2          000180001F0111201811751213090009      .79999          .79999           2           ADD  TO  EXISTING  VALUE
     2          000180001F0111201811751213100009      .79999          .69999           2           ADD  TO  EXISTING  VALUE
     2          000180001F0111201811751213110009      .69999          .00000           2           ADD  TO  EXISTING  VALUE
```

Figure 7.3.2-a. Update Error Messages (SAROAD).

'INVALID ACTION CODE'

A code other than 1, 2, 3, or 4 was encountered on a transaction record. The record is written onto a Reject file.

'CHANGE FOR NONESIXTANT RECORD'

An attempt was made to change a nonexistant NOWDATA record. The trans record is written onto a Reject file.

"DELETE MISSING RECORD'

An attempt was made to delete a nonexistant NOWDATA record. The trans record is written onto a Reject file.

'ADD TO EXISTING VALUE'

An attempt was made to add a data value to a NOWDATA record which already contains that value. The trans record is written onto a Reject file.

'CHANGE TO NONEXISTANT VALUE'

An attempt was made to change a nonexistant NOWDATA data value. The transaction record is written onto a Reject file.

'DELETE MISSING VALUE'

An attempt was made to delete a nonexistant or missing NOWDATA data value. The transaction record is written onto a Reject file.

'VAL DELETE ON NONEXISTANT REC'

An attempt was made to delete a data value on a nonexistant NOWDATA record. The transaction record is written onto a Reject file.

Figure 7.3.2-b. Error messages.

Section 7, Chapter 4, Subject 1, dealing with validation of NEDS emission data, is not available at present. The procedures related to this topic are under development. This subject will be added in a future Update to AEROS Volume II.

Validation is the term used to identify action taken to ascertain that data are correct and complete. Air quality data entered into AEROS (SAROAD) must pass through rudimentary logic checks for reasonableness. Assuming the data pass EDIT to get on the files, then the data may be checked to see if values fall within normal range for that pollutant. If they are outside normal ranges but are not extreme, it is difficult for the computer to be programmed to determine whether these are proper (valid) data. In such an instance, a validation report may be generated by the Regional Office by automatically comparing individual data values to see if the values fall within the normal range for each specific pollutant. Any validation report which is generated by this procedure should be returned to the agency responsible for the data to double check the values which appear questionable.

Upon determination that the data are valid, the Regional Office or state should notify NADB. If they take no action, the data are assumed "passively validated." Corrections must be submitted to National Air Data Branch, Data Processing Section.

BACKGROUND

A data anomaly is defined within the NADB Auditing System as a data value or statistical summary about which some question is raised. The question may involve stack data, control data, emissions, emission factors, or some other piece(s) of emission information. The data may be questioned because, although they have passed the computerized edit and validation checks, they appear to be totally incorrect when compared with other information or are otherwise suspect and it is felt that some questions should be answered before the data are completely accepted. Whatever the context or type of question, each investigation will go through three stages: Check of Processing, Check of System, or Check of Technical Data.

Anyone raising a question deserves to have an answer, and it is the responsibility of NADB to follow a procedure that will determine whether the data or summary in question is correct or not. It is, therefore, imperative that there be a feedback loop that will allow for a response directly back to the person asking the question. See Figure 7.5.1-a for overall flow.

PROCEDURE

Anyone having a question concerning emissions data or summary of emissions data should transmit the question in writing to the Chief, Request and Information Section (RIS), National Air Data Branch, Research Triangle Park, North Carolina 27711. The RIS will assign a control identification number to the anomaly and will proceed to the first stage of the investigation - Check of Processing. During this first stage, the Data Processing Section (DPS) will determine if the anomaly was caused by some data processing or data handling procedure followed by DPS.

If there is determined to be no problem in the processing of the actual data, the second stage of the investigation is begun - Check of System. During this stage, a check of the computerized system to determine if there is a computer software problem that must be corrected is made.

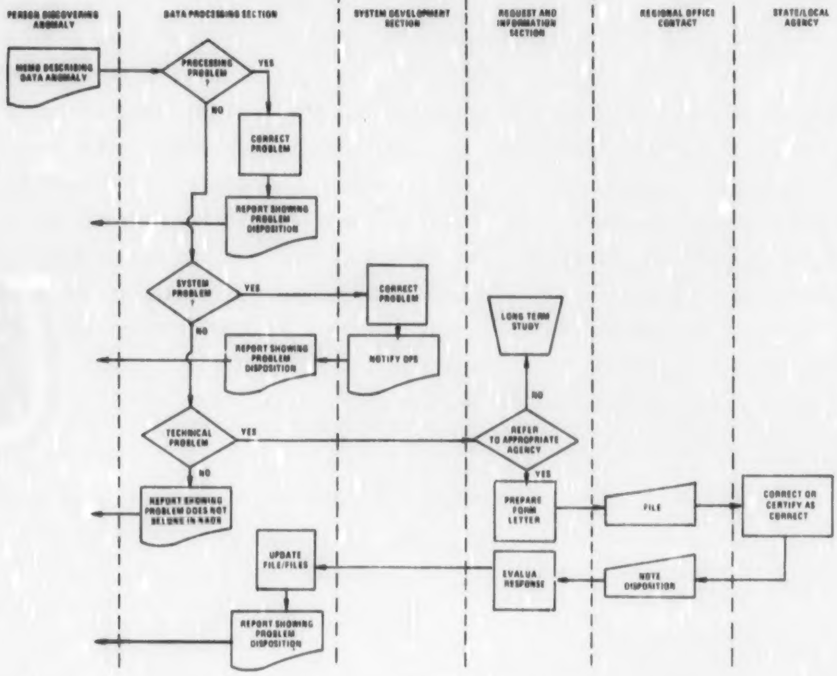

PERSON DISCOVERING ANOMALY
DATA PROCESSING SECTION
SYSTEM DEVELOPMENT SECTION
REQUEST AND INFORMATION SECTION
REGIONAL OFFICE CONTACT
STATE/LOCAL AGENCY
MEMO DESCRIBING DATA ANOMALY
PROCESSING PROBLEM ?
YES
NO
CORRECT PROBLEM
REPORT SHOWING PROBLEM DISPOSITION
SYSTEM PROBLEM ?
YES
CORRECT PROBLEM
NO
REPORT SHOWING PROBLEM DISPOSITION
NOTIFY OPS
LONG TERM STUDY
NO
TECHNICAL PROBLEM
YES
REFER TO APPROPRIATE AGENCY
NO
YES
REPORT SHOWING PROBLEM DOES NOT BELONG IN NADB
PREPARE FORM LETTER
FILE
CORRECT OR CERTIFY AS CORRECT
UPDATE FILE/FILES
EVALUA RESPONSE
NOTE DISPOSITION
REPORT SHOWING PROBLEM DISPOSITION

Figure 7.5.1-a. Handling data anomalies, emission data.

An anomaly that is determined to have been caused by one of the above situations will be corrected in-house and, once the correction is made, the person questioning the information will be notified of its disposition.

A majority of the data anomalies brought to NADB will involve, either directly or by a process of elimination, the final stage of investigation - Check of Technical Data. This stage is required at any point where it is determined that the agency responsible for the information must investigate it specifically for errors and notify NADB of its findings. It is also possible that this stage would be required if a long-term re-evaluation of something like an emission factor were required. In both cases, the Request and Information Section (RIS) will be notified of the anomaly by DPS, and they will be responsible for any further investigation. RIS may be able to resolve the data anomaly in-house on inspection so that reference to State or local agency may not be necessary.

If it is determined that the responsible agency should be notified, RIS will do so through the appropriate Regional Office by using the form letter shown in Figure 7.5.1-b. This form will be prepared in triplicate - one copy remaining in RIS and the other two, along with point source or area source listing illustrating the problem, will be transmitted to the Regional Office NEDS Contact. The Contact should pull one copy and mail the remaining one and all reports to the appropriate State or local agency, after determining that he can not resolve the question.

The State or local agency, once it has received this information, should respond within 30 days by returning the letter to the NEDS Contact accompanied, if necessary, by a correction of the data in the appropriate NEDS format and supporting materials, being sure to indicate whether the data are to be added, changed, or deleted. These data will then be returned to the NADB Data Anomaly Coordinator with the letter returned by the agency (and any other supporting rationale) for processing into the NEDS data file. The revised output or other appropriate materials will be supplied to the originator of the question.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

SUBJECT: Data Anomaly - Emission Data

DATE:

FROM:

Control I.D.:___________

TO:

For Attention of:

The following emissions data have been questioned as to completeness or correctness. Please review this information and return this letter with your response accompanied by any necessary data in the appropriate NEDS format to your Regional Office. Be sure to indicate whether the data are an "add," "change" or "delete." If you have any questions please contact your Regional Office NEDS contact.

Plant Code:

Point Code:

SCC Code:

Question:

To Be Completed by Responding Agency

1. Data are correct/complete as is. Yes/No
2. Data additions, changes, or deletions that will correct the data anomaly are attached. Yes/No
3. Additional Comments or Supporting Information:

4. Completed by:

Figure 7.5.1-b. Form letter for notifying Regional Office of data anomaly, emission data.

BACKGROUND

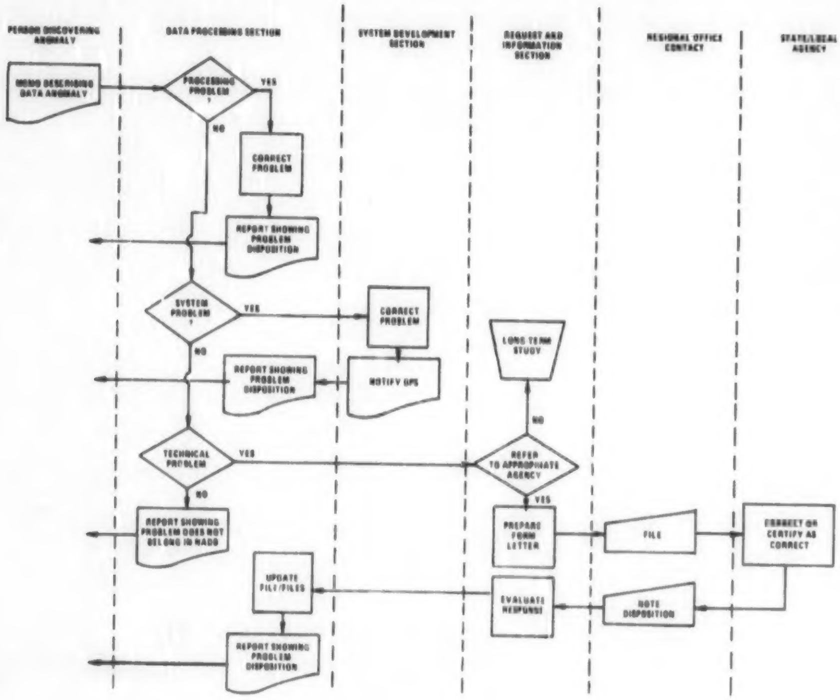
A data anomaly is defined within the NADB Data Auditing System as a data value or statistical summary about which some question is raised. The question may involve site data, pollutant observations, or some other piece(s) of air quality information. The data may be questioned because, although they have passed the computerized edit and validation checks, they appear to be totally incorrect when compared to other information or are otherwise suspicious and it is felt that some questions should be answered before the data are completely accepted. Whatever the context or type of question, each investigation will go through three stages: Check of Processing, Check of System, or Check of Technical Data.

Anyone raising a question deserves to have an answer, and it is the responsibility of NADB to follow a procedure that will determine whether the data or summary in question is correct or not. It is, therefore, imperative that there be a feedback loop that will allow for a response directly back to the person asking the question. See Figure 7.5.2-a for overall flow.

PROCEDURE

Anyone having a question concerning air quality data or summary of air quality data should transmit the question in writing to Chief, Request and Information Section, National Air Data Branch, Research Triangle Park, North Carolina 27711. The RIS will assign a control identification number to the anomaly and will proceed to the first stage of the investigation - Check of Processing. During the first stage, the Data Processing Section will determine if the anomaly was caused by some data processing or data handling procedure followed by DPS.

If there is determined to be no problem in the processing of the actual data, the second stage of the investigation is begun - Check of System. During this stage, a check of the computerized system to determine if there is a computer or software problem which must be corrected is made.



PERSON DISCOVERING ANOMALY
DATA PROCESSING SECTION
SYSTEM DEVELOPMENT SECTION
REQUEST AND INFORMATION SECTION
REGIONAL OFFICE CONTACT
STATE/LOCAL AGENCY
MEMO DESCRIBING DATA ANOMALY
PROCESSING PROBLEM ?
YES
NO
CORRECT PROBLEM
REPORT SHOWING PROBLEM DISPOSITION
SYSTEM PROBLEM ?
YES
CORRECT PROBLEM
NO
REPORT SHOWING PROBLEM DISPOSITION
NOTIFY UPS
LONG TERM STUDY
NO
TECHNICAL PROBLEM
YES
REFER TO APPROPRIATE AGENCY
NO
YES
REPORT SHOWING PROBLEM DOES NOT BELONG IN NADB
PREPARE FORM LETTER
FILE
CORRECT OR CERTIFY AS CORRECT
UPDATE FILE/FILES
EVALUATE RESPONSE
NOTE DISPOSITION
REPORT SHOWING PROBLEM DISPOSITION

Figure 7.5.2-a. Handling data anomalies, air quality data.

An anomaly that is determined to have been caused by one of the above situations will be corrected in-house and, once the correction is made, the person questioning the information will be notified of its disposition.

A majority of the data anomalies brought to NADB will involve, either directly or by a process of elimination, the final stage of investigation - Check of Technical Data. This stage is required at any point where it is determined that the agency responsible for the information must investigate it specifically for errors and notify NADB of its findings. It is also possible that this stage would be required if a long-term re-evaluation of something like a minimum detectable value were required. In both cases, the Request and Information Section will be notified of the anomaly by DPS, and they will be responsible for any further investigation RIS may be able to resolve the data anomaly in-house on inspection so that reference to State or local agency may not be necessary.

If it is determined that the responsible agency should be notified, RIS will do so through the appropriate Regional Office by using the form letter shown in Figure 7.5.2-b. This form will be prepared in triplicate - one copy remaining in EFS and the other two, along with site inventory or raw data listings illustrating the problem, will be transmitted to the Regional Office SAROAD Contact. The Contact should pull one copy and mail the remaining one and all reports to the appropriate State or local agency, after determining that he can not resolve the question.

The State or local agency, once it has received this information, should respond within 30 days by returning the letter to the SAROAD Contact accompanied, if necessary, by a correction of the data in the appropriate SAROAD format and supporting materials, being sure to indicate whether the data are to be added, changed, or deleted. These data will then be returned to the NADB Data Anomaly Coordinator with the letter returned by the agency (and any other supporting rationale) for processing into the SAROAD data file. The revised output or other appropriate materials will be supplied to the originator of the question.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

SUBJECT: Data Anomaly - Air Quality Data

DATE:

Control I.D.:__________

FROM:

TO:

For Attention of:

The following air quality data have been questioned as to completeness or correctness. Please review this information and return this letter with your response accompanied by any necessary data in the appropriate SAROAD format to your Regional Office. Be sure to indicate whether data are an "add," "change" or "delete." If you have any questions please contact your Regional Office SAROAD contact.

Site Code:

Interval:

Pollutant:

Units:

Method:

Dates:

Question:

To Be Completed by Responding Agency

1. Data are complete/correct as is. Yes/No
2. Data additions, changes, or deletions that will correct the data anomaly are attached. Yes/No
3. Additional Comments or Supporting Information:
4. Completed by:

Figure 7.5.2-b. Form letter for notifying Regional Office of data anomaly, air quality data.

On many occasions, questions arise regarding whether additional data should be in the AEROS data banks for certain air quality sampling sites or emission sources. In these cases, knowledgeable sources may indicate they know, for instance, of the existence of a large emission source or an air quality sampling station in a certain area. With such information as is available being identified and reported, NADB may initiate a VERIFICATION search to determine whether or not such a data set exists and should legitimately be reflected in the appropriate NEDS or SAROAD components of the data bank. The data reputed or in question may be temporarily stored on the data bank pending outcome of the search and investigation. If the data are VERIFIED, then the record is added to the proper data bank with appropriate supplemental and complete information as is available. These data must then go through EDIT, VALIDATION, and other checks as indicated elsewhere in this manual. If the VERIFICATION is negative, the record is stricken from temporary storage. VERIFICATION will be used generally in the context of adding new air quality sampling data (frequently at "new" sites) or newly identified emission source information that was not previously identified on NEDS or SAROAD.

The specific procedures and descriptions of system interaction are described in detail in following chapters of this manual.

GENERAL

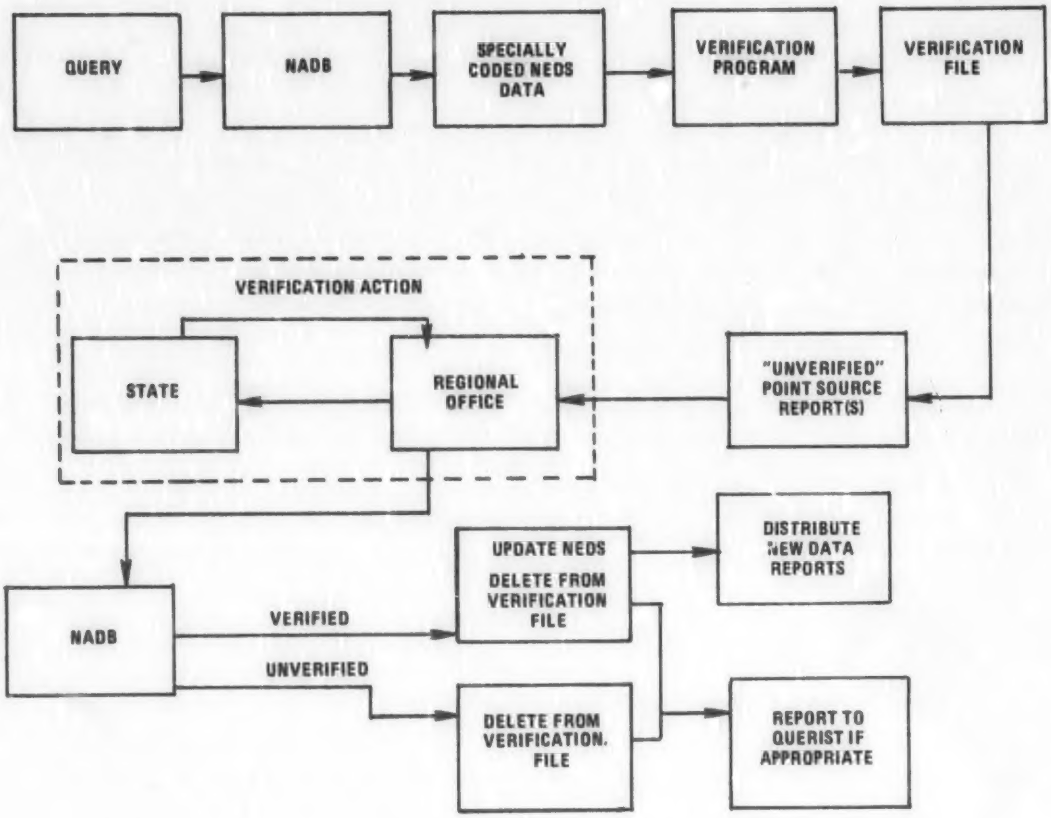
Frequently NADB identifies source or emission information that is not currently reflected in the NEDS data base. This information may be in the form of queries requesting missing point sources, points, etc. or may be in the form of independently (EPA) gathered information related to sources or emissions for source(s) already in NEDS. Since it is the policy of NADB to encourage the maximum participation of Regional Offices and States in further development and maintenance of the data base, a procedure that will define the routine processing that these data will receive is required. This processing and related interactions constitute the AEROS Emissions VERIFICATION system.

NADB will, through the adoption and utilization of these procedures and this subsystem, be able to routinely store and process tentative or interim information that has been identified. Opportunity will then be given for the Regional and State officials to interact to VERIFY the existence of a source or source-related data. Corrections, additions, or other modifications can then be redirected back into the NEDS updates.

VERIFICATION SUBSYSTEM DESCRIPTION

A VERIFICATION subsystem for AEROS emissions (NEDS) has been defined. The subsystem is, in effect, a duplicate of the NEDS system with some changes and modifications that are largely transparent to the non-NADB user. Data flow is shown in Figure 7.6.1-a. Data for sources that are identified as missing in NEDS are coded into the VERIFICATION subsystem by NADB as responsive to input, requests, or questions from internal or external sources. The data coded will be at various stages of completeness depending upon the extent of the information available.

The records produced will be stored in a "dummy" NEDS user file called the VERIFICATION FILE. From this file, Point Source Reports, which will be identified as "UNVERIFIED" data, will be retrieved. These reports will be routed through the



QUERY
NADB
SPECIALLY CODED NEDS DATA
VERIFICATION PROGRAM
VERIFICATION FILE
VERIFICATION ACTION
STATE
REGIONAL OFFICE
"UNVERIFIED" POINT SOURCE REPORT(S)
NADB
VERIFIED
UNVERIFIED
UPDATE NEDS
DELETE FROM VERIFICATION FILE
DISTRIBUTE NEW DATA REPORTS
DELETE FROM VERIFICATION. FILE
REPORT TO QUERIST IF APPROPRIATE

Figure 7.6.1-a. Box diagram of sybsystem data flow.

Regional Offices to the State agencies for review and response. If the emission source and/or data are VERIFIED, then the information should be coded onto cards or tape via the NEDS Point Source Input Forms (OMB No. 158-R0095) and rerouted back to NADB along with a set of "deletes" to be used to remove the source from the temporary VERIFICATION (unverified) file. If the source is determined to be nonexistent or the data should not be considered valid (i.e., NEDS should be left unchanged), then only a set of "deletes" will be required to remove the query from the "UNVERIFIED" file.

PROCEDURAL DETAILS

When a query comes to NADB regarding emission data or sources that are identified as not being included in NEDS, the following actions will be initiated:

1. NADB will code the available information onto NEDS Point Source Input Forms (OMB No. 156 R0095);
    a. Column 79, Cards 1-6, will be coded with a "V," rather than a "P," which is normally indicative of point sources.
    b. Each card required for a source not in NEDS will have "dummy" point i.d. with a "9" in Column 10. If the source is already in NEDS, the proper existing i.d. will be used.
    c. Ownership codes, Column 74, Card 1, will reflect a code to identify the reason for the initiation of the verification query. These will be identified to the user.
2. The data coded will be keypunched and fed into the NEDS VERIFICATION file and stored. At the same time, point source reports will be generated, clearly identified as "UNVERIFIED." Precautionary measures preclude the unverified data from being reflected on the NEDS USER FILE.
3. The Point Source Reports produced will be distributed (two copies) to the appropriate Regional Office. Verification requests for individual sources

will be accompanied by a form letter (Figure 7.6.1-b) requesting verification. Grouped requests of similar sources may have one such form for many verification printouts.

4. The Regional Office should then bring the source (or data) to the attention of the proper State officials, using the continued capabilities of the form letter (Figure 7.6.1-b).

5. The information on the unverified Point Source Report should be verified and reviewed for completeness and accuracy. Through this process, the State will be made aware of new or existing sources not properly reflected in NEDS.

6. If the information should legitimately be reflected in NEDS:
   a. NEDS Point Source Input Form(s) should be completed:
      (1) Proper new or existing plant identifications should be used in Columns 10-12 of all cards.
      (2) Additional information on the source should be included in proper fields according to existing established procedures.
      (3) The proper ownership code should be used in Column 74, Card 1.
      (4) Column 79, Cards 1-6, should reflect code "P" as has been used prior to the release of these VERIFICATION procedures.
   b. "Delete" form(s) should be prepared with:
      (1) The "dummy" i.d.'s as were on the NEDS UNVERIFIED Point Source Report.
      (2) A "V" in Column 79 of Card 1.
      (3) A "D" indicated in Column 78 of Card 1. (This will provide for removal of the source from the VERIFICATION file.)

7. If the source information is not legitimate, only "deletes" (Item 6-b) need be prepared.

8. The coded forms should then be keypunched by the State or Regional Office and rerouted to the Data Processing Section, NADB. They may be paired or

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

SUBJECT: NEDS Data Verification DATE:

FROM:

TO:

For Attention of:

The attached Point Source Report(s) are from the NEDS VERIFICATION FILE. The source or data contained therein have been brought to NADB's attention by ____________________________. Additional background information is also attached. Please verify if this information should be included in NEDS. A positive response will entail the completion of data submission to your Regional Office in the NEDS format (per OMB Form No. 158-R0095) and submission of a "verification delete" data set. A negative response will entail the submission of a "verification delete" data set only. Additional procedural details are contained in the AEROS Manual, Volume II, Section 7, Chapter 6. Contact your Regional Office NEDS contact for further details.

Figure 7.6.1-b. Form letter for verification of point source.

separated (mixed) as they will be properly sorted automatically.

9. Updates to NEDS will be made by NADB:
   a. To add the new information to the NEDS User File, and/or
   b. To remove the "UNVERIFIED" source from the VERIFICATION file.
10. Point Source Reports will be made for the complete plant(s) as revised or added and entered into NEDS. These will be distributed (two copies) through the Regional Office AEROS (NEDS) contact to the State.
11. NADB will respond to the original querist, if appropriate, with copies of the Point Source Report(s) involved.

SOURCES OF VERIFICATION INPUT

"Outside" Requests

NADB is often queried as to why there is no (or incomplete) information reflected in NEDS for an identified point source. When there is a concrete basis that leads one to suspect that there indeed is such a source or that new data should be substituted for an existing source, a verification search will be initiated by NADB. Through this mechanism, missing or erroneous information, upon which State Implementation Plans are presumably based, will be brought to the State's attention, and adjustments can be made, if necessary.

NADB-Identified "Missing" Point Sources

NADB has been involved in independent efforts to identify the level of completeness of the NEDS data base. These efforts have involved internally generated checks and cross-checks as well as contractor-secured investigations. Many sources of information have been used, and others are believed to be available which, if used, would enable identification of additional "missing" sources. Some details on the possibilities are described in "Methodology for Inventorying Missing Point Sources," an unpublished paper by J.R. Hammerle and W.M. Vatavuk of NADB. Copies of this paper may be requested from NADB.

Contractor-secured Input. There has been an initial effort made by NADB, through a contract with Booz-Allen Applied Research (Contract 68-02-1005, Task 3), to cross-check various industry (SCC) oriented "lists" against the point source listings in NEDS. Although Appendix C of requirements for SIP submittal (Federal Register, Vol. 36, No. 158, August 14, 1971) is no longer applicable in a regulatory sense, the industries identified therein provided a good base for defining the limits of such an investigation.

The data available and sources identified through this effort have been input into the NEDS VERIFICATION FILE and will fall within the procedures defined in this section of this manual. Copies of the final report, describing in more detail the work performed, may be requested from NADB. Future efforts in this area may be developed as need materializes.

In-house Input. NADB occasionally identifies probable emission sources not in NEDS as a result of its in-house activities. These activities may also cause NADB to initiate a VERIFICATION request. The same standard procedures defined herein will apply.

GENERAL

VERIFICATION requests for air quality data generally are originated as a result of information coming to NADB's attention which indicates that routine sampling is being done by some agency, the results of which should be, but are not, routinely being incorporated into the AEROS data base. Air quality data will generally not be the subject of VERIFICATION, but rather the existence of the sampling site. Therefore, the VERIFICATION subsystem for AEROS air quality data consists simply of the use of a form letter bringing the probable existence of a specific site(s) to the attention of the proper agency.

PROCEDURE

Anyone having a question concerning the existence of an air quality sampling site and associated data should bring the available information to the attention of the Request and Information Section (RIS), NADB. A routine form letter (Figure 7.6.2-a) will be initiated by NADB with any pertinent specific information available noted and/or attached with the form. NADB will assign a control i.d. to facilitate tracking the forms and notifying inquirers as to the results of their requests.

Upon receipt of such a form letter by the Regional Office, one copy should be maintained by the AEROS (SAROAD) contact and a second copy forwarded to the appropriate agency. If VERIFICATION is positive, the agency should then initiate action to establish proper site identification and arrange for the associated data to be submitted to NADB through the Regional Office, using established routine procedures contained elsewhere in this manual. If VERIFICATION is negative or positive, the form letter should be completed and re-routed to RIS, NADB, through the Regional Office so that response may be given to the originator of the inquiry.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

SUBJECT SAROAD Data Verification DATE:

FROM

TO:

For Attention Of:

It has been brought to the National Air Data Branch's (NADB) attention by ____________________ that air quality data are probably being collected that are not, but should be, reflected in the AEROS/SAROAD data bank. Please investigate the allegation, and if such data (sites) are VERIFIED to exist, please indicate below the schedule that is to be followed in entering the data into AEROS or reasons why it will not be.

In either case, whether the VERIFICATION is positive or negative, please return this form to NADB through the Regional Office AEROS (SAROAD) Contact.

____

Alleged site location, description, and data being collected per information given to NADB by inquirer:

To Be Completed By Responding Agency.

1. Existence of alleged site is VERIFIED. Yes/No
2. Valid data are being collected. Yes/No
3. a. Schedule for data submission to NADB (site forms plus data forms),

   or

   b. Reasons why no data will be submitted.
4. Additional comments:
5. Completed by: Name____________________________

   Title____________________________

   Contact via________________________

Figure 7.6.2-a. Form letter for verification of air quality data collection.

Certification indicates the overt approval of a State and/or Regional Office to a given data base. Certification may come routinely following the acts of validating a data submission using a NEDS validation report or independently checking against other existing data. On occasion, a request may be initiated by management or other components that will prompt NADB to request that a "block" of data be examined in detail to determine whether it is indeed complete, accurate, and timely. The indication of positive results for such an action would be "certification."

At this time, there is no legal connotation attached to this terminology, nor is there expected to be within the foreseeable future.

Certification indicates the overt approval of a State and/or Regional Office to a given data base. Certification may come as the result of routinely reviewing the data in the SAROAD system to determine that they indeed correspond to the measurements actually taken (after also making sure all validation statements are resolved). On occasion a request may be received by NADB to investigate whether a given data base or "block" of data is complete, accurate, and timely. Following such a request, NADB would pass decision and action on to the proper and responsible Regional Office for resolution. The positive resolution of such a request would be indicated by the act of "certifying" the data in question.

At this time, there is no legal connotation attached to this terminology, nor is there expected to be within the foreseeable future.